Version 1.2

LogTag Analyzer

User Guide

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CHAPTER 1

Introduction

This guide will take you through the relevant steps so that you will be able to make the most of your LogTag products. The guide is structured into chapters that will guide you through the process of installing the software, using the LogTag products and lastly some of the options that are available to you for making your efforts and experience of using the software as efficient, effective and pleasant as possible.

The chapters in this guide are placed in an order that you will need to follow in order to successfully use the LogTag products first time. Experienced users of the software may choose to skip the first two chapters. However, if you are about to use a newer version of a LogTag and/or Interface Cradle, we recommend you at least skim the installation chapter for any relevant changes that should be performed prior to using your new version of LogTag hardware.

This guide covers all the features included in version 1.2 of the LogTag Analyzer software. The chapter "***Finding your software version***" included later in this guide will help you through the process of finding out what version of the LogTag Analyzer software is being used and will help explain and determine if this version of the guide refers to the version of the software being used. The chapter "***Getting updated software***" included later in this guide will help you through the process of obtaining an updated copy of the software. Therefore, if you find a feature described within this guide that does not appear in your software and/or a feature within the version of software being used that is not described in this guide, then we recommend you obtain a newer version of the software and/or a newer version of this guide. You may obtain a free online copy of the latest version of this guide from the LogTag Recorders Internet site, www.logtagrecorders.com.

Although this guide includes all the relevant information to install and use the product range supplied by LogTag Recorders, there are at times an expectation that the reader is familiar with using their computer and the Windows® operating system. If a feature of the software is specific to a version of the Windows® operating system, the guide will indicate appropriately for you the relevant differences.

Feedback, positive or negative, about the software, the LogTag products and/or this guide is welcome. If you believe the products could be improved, you are welcome to send us your comments and we will do our best to include the improvements in a future release.

CHAPTER 2

Installing the software

To make use of your LogTag you will need to first install the software on your computer. This will allow you to prepare your LogTag(s) for use, retrieve the readings the LogTag(s) have recorded, and analyze the data. This chapter will take you through the steps necessary to successful install the software on to your computer so you can begin using your LogTag(s). The process of installing the LogTag Analyzer software should be very familiar to users that have previously installed other software and therefore some experienced users may choose to only skim read or entirely skip this chapter. If you are new to using a computer and/or unsure about installing the software, we recommend you read the remainder of this chapter.

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System requirements

To ensure that the software will be able work with your computer, the following lists the minimum specifications required:

- Pentium II 233MHz processor
- 64MB RAM
- 10MB free disk space
- Windows 98, Windows Me, Windows NT, Windows 2000, Windows XP
- Internet Explorer 5.0 or later
- 1 available serial port and/or 1 available USB port
- 800 x 600 screen resolution
- 256 screen colors.

The recommended specifications are:

- Windows 2000, Windows XP, or later
- Internet Explorer 6.0 or later
- 65535 (16bit), or more, screen colors.
- 1024 x 768, or higher, screen resolution.

If you are unsure of what your computer specifications are, please read the following section, which will help you locate the relevant information.

Finding your computer specifications

If you are unsure of your computer specifications you can find the relevant information by following these steps:

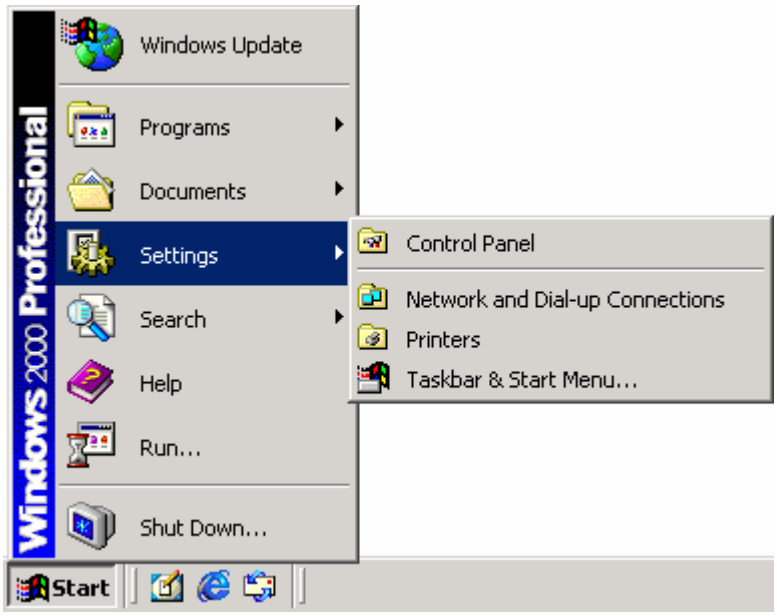
1 To determine your computer CPU, RAM and version of Windows Operating system:

a) Open the "Control Panel". This can be done by using the mouse to click on the Windows "Start" button, typically located in the bottom left of the screen, to open the Start menu.

b) Once the "Start" button has been clicked, you will see a menu appear.

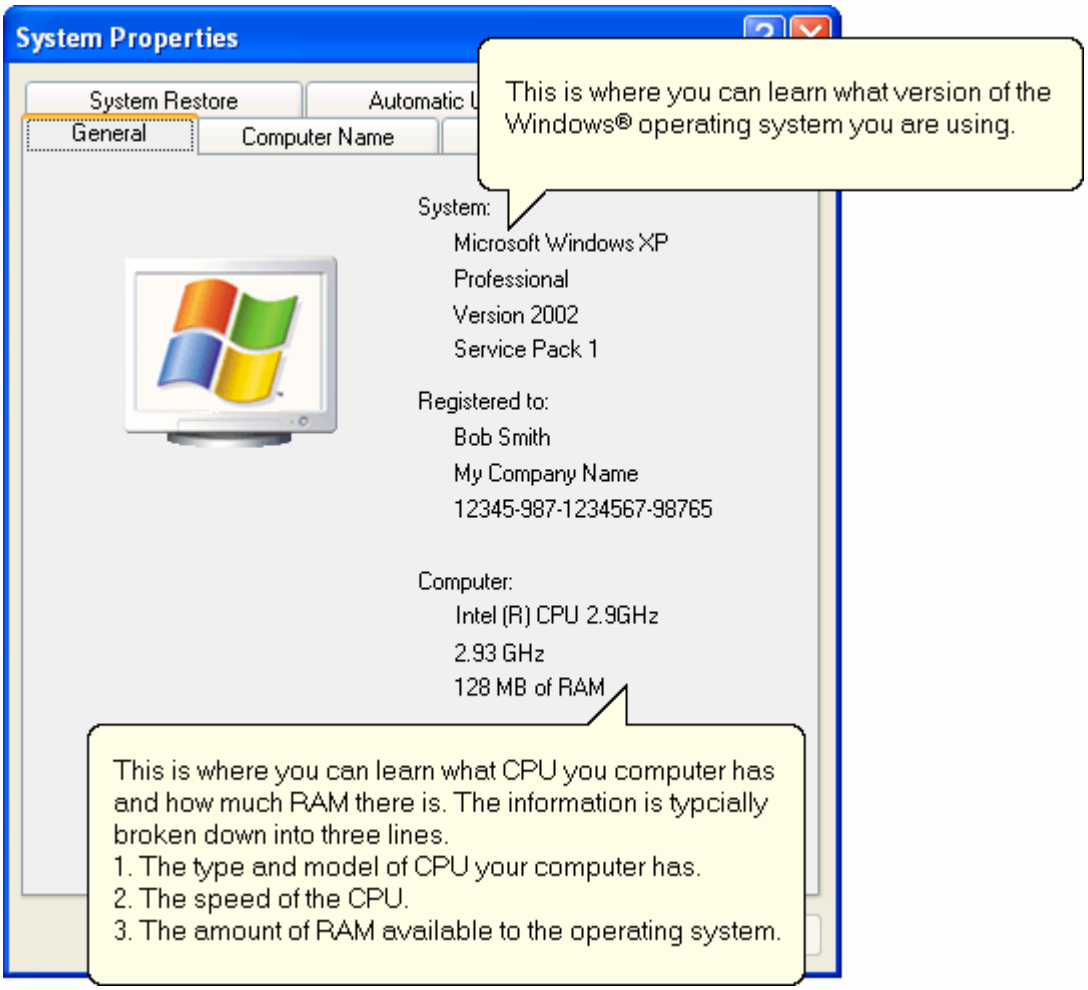
c) If your menu looks similar to the following picture, click on the visible "Control Panel" item.

d) If your menu looks similar to the following picture, the "Control Panel" item is located within the "Settings" menu item.



e) Within the "Control Panel" window there is a "System" icon. For Windows XP users, you may need to "Switch to Classic View" to locate the "System" icon quickly. Start (open) the "System" icon once you have located it.

f) Clicking on the "General" tab at the top of the "System Properties" window, which is usually the default, will display the relevant information for you about your system.



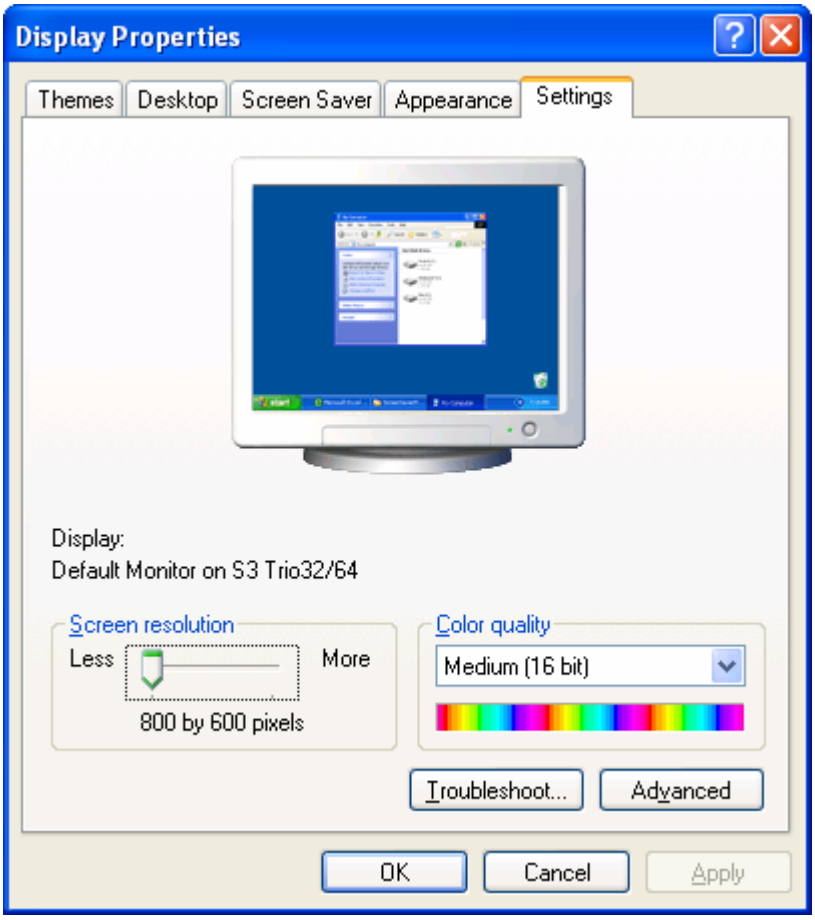
2 To determine your screen resolution and colors:

a) Open the "Control Panel" as explained in step 1.

b) Open the "Display" item.

c) Click on the "Settings" tab at the top of the "Display Properties" window will display the relevant information for you about your display.

d) From the "Settings" portion of the "Display Properties" window you will see your current screen settings and you may also be able to change some of your display settings if you want.



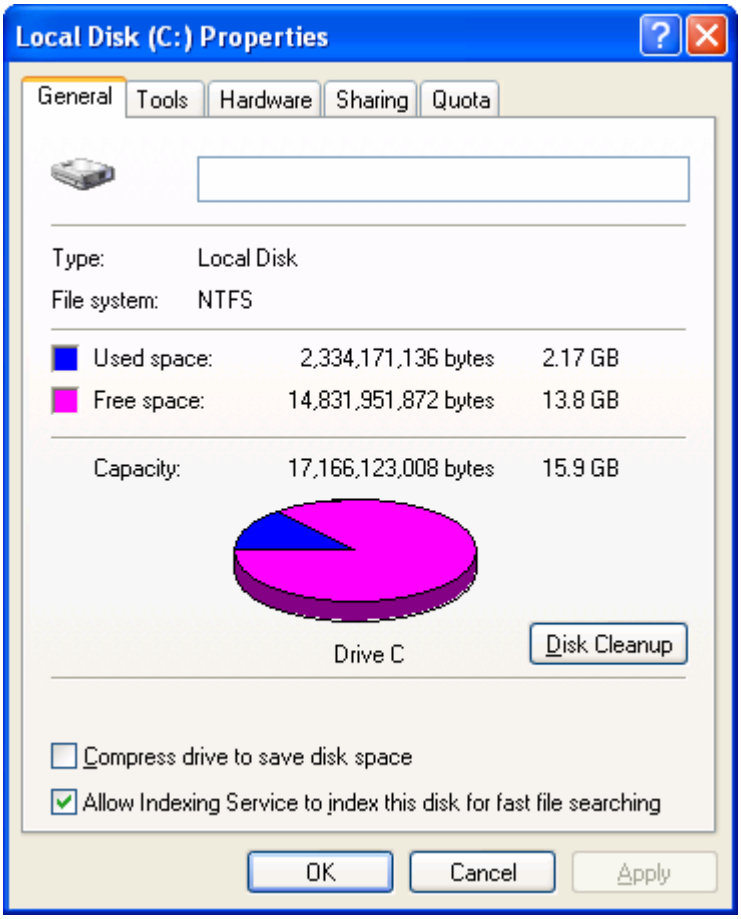
3 To determine your spare hard disk drive space:

a) Open "My Computer" which is typically located on your desktop and/or within the Windows "Start" menu.

b) Using your mouse, click the button on the right over the drive that includes "(C:)" in its description.

c) Select "Properties" (left mouse click) from the popup menu that will appear.

d) Clicking on the "General" tab at the top of the drive properties window will display the relevant information for you about your hard drive.

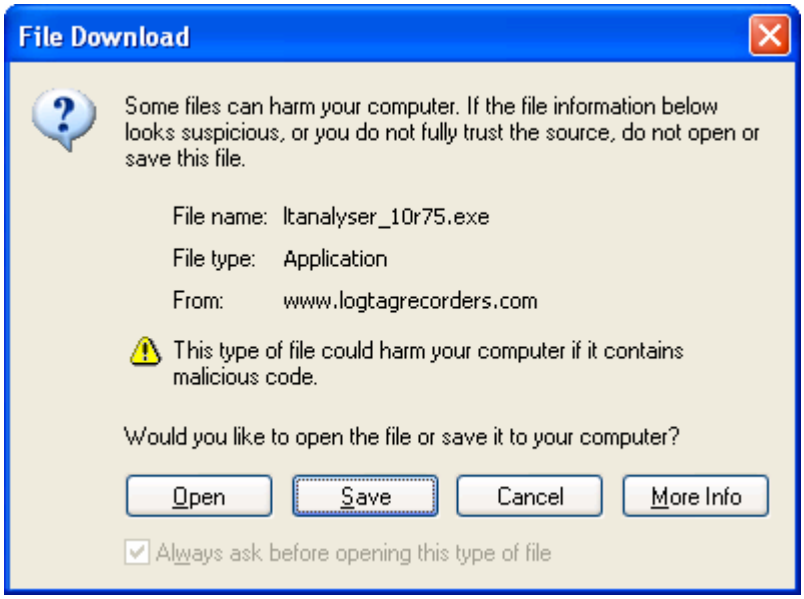


e) If you have multiple (hard disk) drives installed on your computer you can repeat steps (b) through to (d) for each drive to get the same type of information.

Getting a copy of the software

The software is available for download from the LogTag Recorders Internet site, www.logtagrecorders.com. LogTag Recorders does not charge for the download of the LogTag Analyzer software or for the updates to the LogTag Analyzer software. You are welcome to distribute copies of the LogTag Analyzer software freely and at your discretion as long as it is distributed in the packaged format as originally downloaded from the LogTag Recorders Internet site.

When you visit the LogTag Recorders Internet site, follow the software navigation links to obtain a download link for the latest version of the LogTag Analyzer software. The request to download LogTag Analyzer software from the LogTag Recorders Internet site will result in an email automatically being sent to you with the download link for the latest version. To begin the actual download of the software process, click on the link provided in your email, and your email software will prompt you to save or open the file.



We recommend choosing the option to save the file to your disk and to save the file to your desktop. If you are an experienced user you may wish to save the file to a different folder of your choosing. Once the installation process has been completed, this file can be safely deleted, as it is not required for using the software.

There is only one file required to be downloaded to be able to install the software on your computer. Once the relevant installation file has been downloaded to your computer, you only have to open the file to begin the installation process.

The installation process

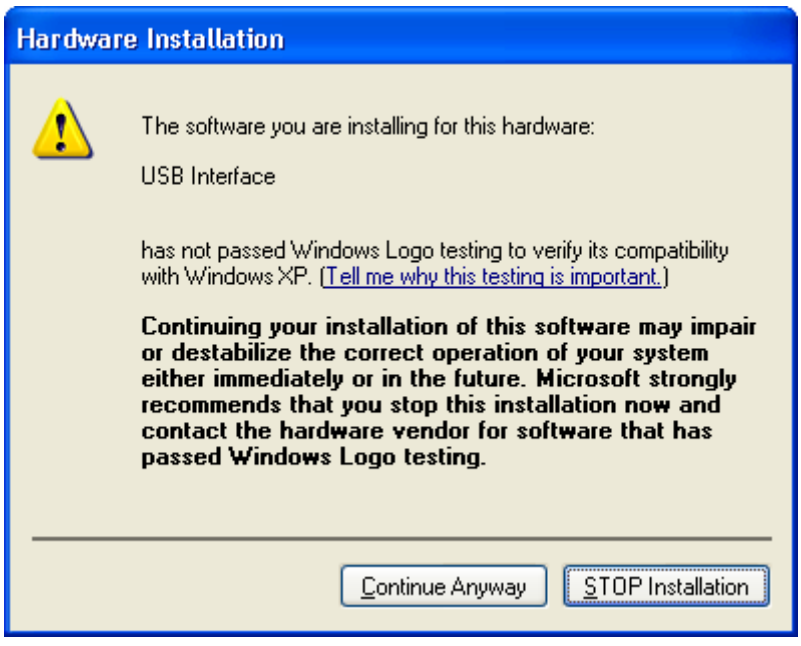
To install the LogTag Analyzer software, first you need to locate the installation file that was downloaded from the LogTag Recorders Internet site. To begin the installation process open the installation file, which is typically performed by double clicking the left mouse button.

Tip: Double clicking a mouse button, implies the user clicks the same mouse button in quick succession.

The installation process will guide you through the relevant steps to correctly and successfully install the software. If you have installed any other software, you should find the installation process familiar. To proceed through each step of the installation process, click the "Next" button. If you want to change a previous step you can click the "Back" button. When the process is ready to be completed, clicking the "Finish" button, when it appears, will finish the installation process. If you want to stop installing the software, click the "Cancel" button.

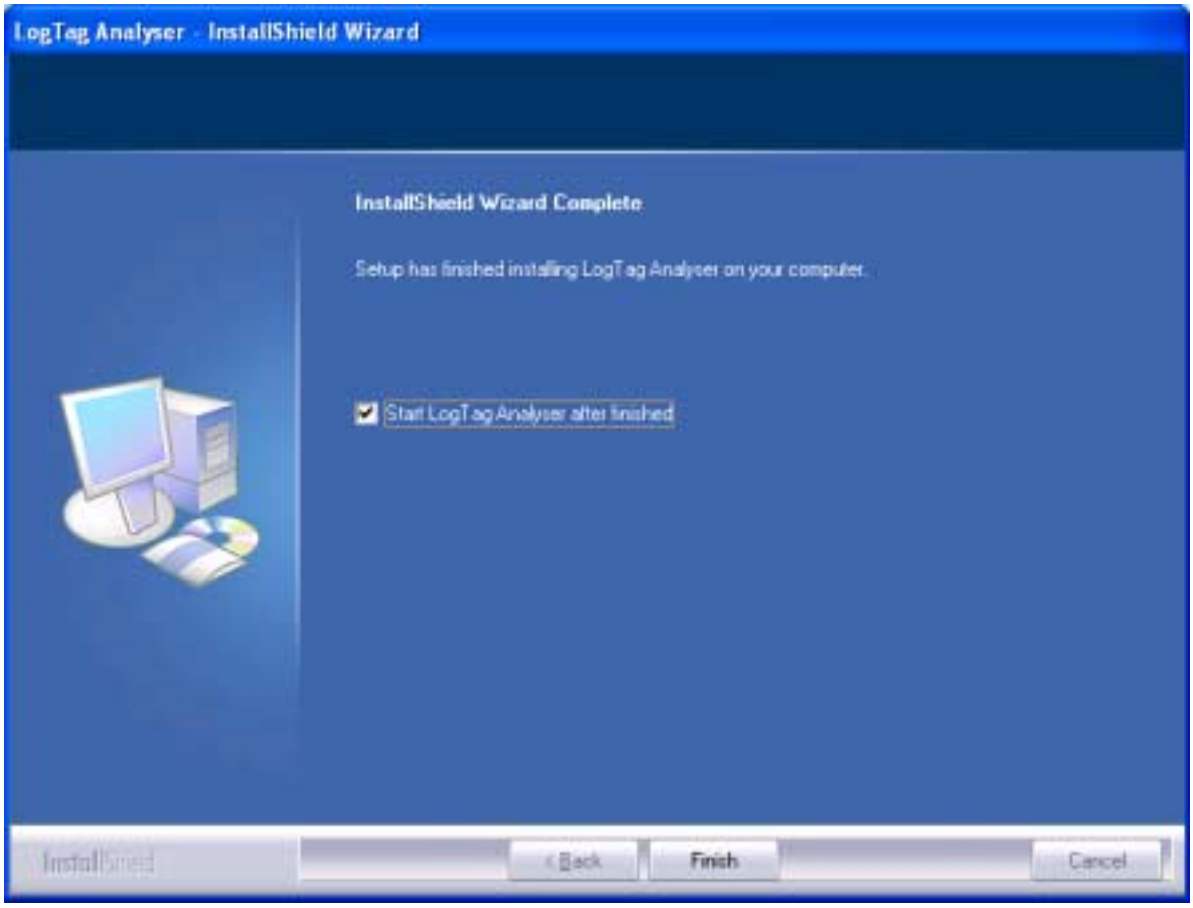
We recommend you leave all options to their default setting, especially if you are unsure of what option to select or what the actual implications are if the option was to be changed.

During the installation process, a window similar to the following picture may appear. This is part of the process of installing the driver for the USB Interface. Clicking on the "Continue Anyway" button will allow the driver to be successfully installed. The chapter "***Resolving USB Driver Problems***", included later in this guide will guide you through the necessary steps to successfully install the driver for the USB Interface if the "STOP Installation" button was clicked.



Starting the software

At the conclusion of the installation process, the final screen will provide you with an option to immediately start the LogTag Analyzer software. If the option "Start LogTag Analyzer after finished" is not visible, then you require other newer software, for example a newer version of Microsoft Internet Explorer, to be installed prior to the LogTag Analyzer software being able to successfully start.



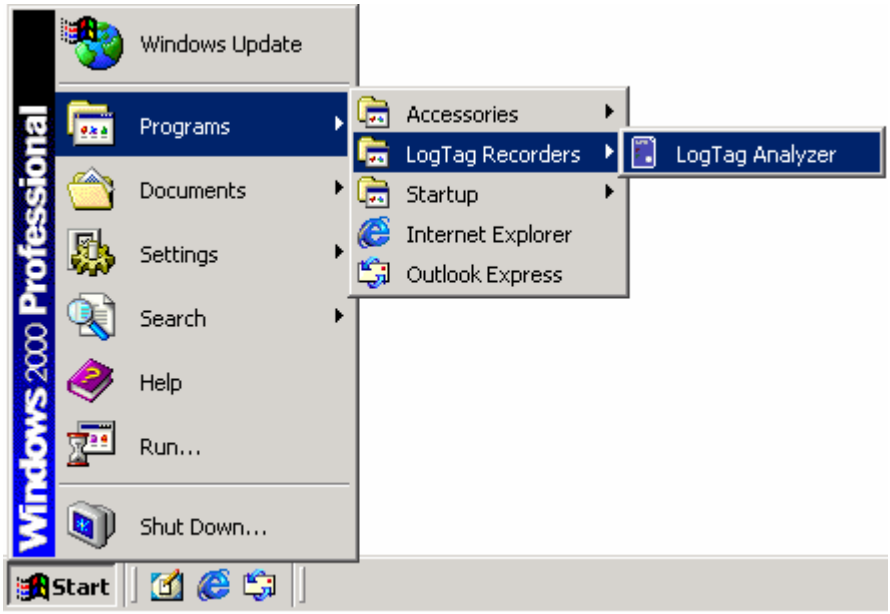
The installation of the LogTag Analyzer software will also provide you with two simple methods to start the LogTag Analyzer at a later time:

1 A "Shortcut" on the desktop, which you can double click to start the software.

2 A "Shortcut" in the "Start" menu system.

If you are using Windows XP, you may need to click on the "All Programs" item to locate the "LogTag Analyzer" shortcut, like in the following picture.

If you are not using Windows XP, you will find the "LogTag Analyzer" shortcut in the "Programs" menu, in a similar location to the following picture.



CHAPTER 3

Quick Start Guide

You've got the software installed on your computer and now you want to use the LogTag, see how it goes and what it can do. This chapter will briefly cover the steps involved to get your LogTag ready to use, how to get it started and then retrieve the recorded information out of the LogTag. The subsequent chapters will explain in more depth these steps and the various options available to you.

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Connecting the Interface

There are two types of the Interface Cradle available. The first connects to the computers serial (RS232) communications port and the other connects to the computers USB (Universal Serial Bus) communications port. Although there may be multiple connectors on the computer for each of these types of communications ports, the shape of each is unique and therefore it is not possible to connect the Interface Cradle to the wrong type of communications port. The software supports the connection of multiple Interface Cradles at the same time and therefore as many serial and/or USB Interface Cradles as are needed and the computer supports may be connected.

The connectors for the serial (RS232) communications ports typically look like the following picture.

Serial (RS232) Port on computer

Serial (RS232)
Interface Connector

Serial (RS232) communication ports can be typically found at the rear of the computer and there are usually at most two ports installed on a single computer. Most serial Interface Cradle connectors will have screws included on the plug and as such we recommend that these are tightened when the connector is plugged in so that it does not accidentally pull out during usage.

The connectors for USB devices typically look like the following picture.

USB ports on the computer

USB Interface connector

Connectors for USB devices and the sockets on the computer where USB devices are plugged in will often display a USB logo nearby to help them be identified. Example pictures of the USB logos that may appear are:

The sockets for the USB communication ports are typically located at the rear of the computer. In some computers there may also be two or more USB communication ports located on a front panel of the computer and/or on the top of the computer case. Please ensure that the software has been installed prior to connecting the USB Interface Cradle to the computer as the software installation also installs the drivers required to successfully connect and use the USB Interface Cradle. If you experience problems getting the software to find and identify a connected USB Interface Cradle then there may have been a problem during the installation of the software with the installation of the drivers that the USB Interface Cradle requires. The subsequent section ***resolving USB driver problems*** will guide through the steps necessary to resolve any problems with getting USB Interface Cradles working on the computer.

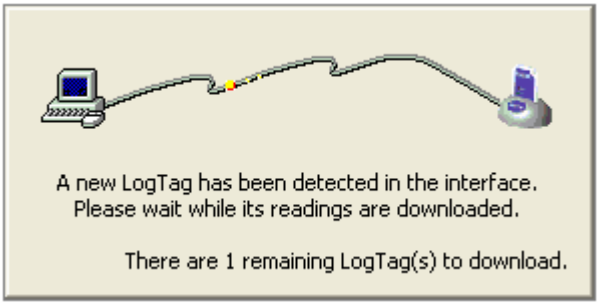
If the computer is using the Windows NT® operating system, a USB Interface Cradle will not be able to be used, as Windows NT® does not support USB devices.

Using the LogTag with the Interface

The LogTag fits into the Interface Cradle just like a putting a piece of bread into a toaster. As shown in the following picture, the LogTag faces towards the front label of the Interface Cradle with the contacts on the reverse side. If you look into the Interface Cradle slot, you will be able to see where the contacts connect with the matching contacts in the Interface Cradle.

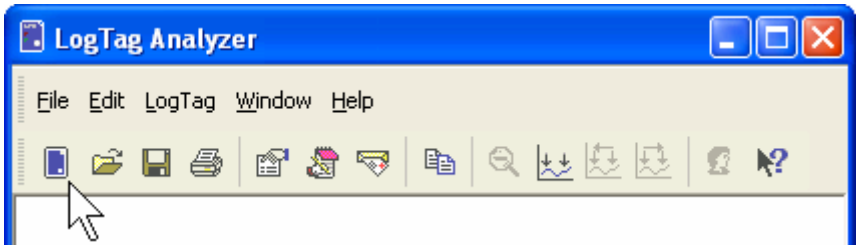
When placing the LogTag into the Interface Cradle slot, you should be able to feel a very slight resistance as the contacts "grab" the LogTag. This is normal. Removal of the LogTag will cause a slight clicking noise as the contacts snap back into their "unloaded position".

If the LogTag has readings stored within its memory, the software will automatically start to download the data and will also display an animated picture during the download process, similar to the following picture.



Get a LogTag ready for use

To begin the process of preparing a LogTag to record information, first click the LogTag icon ( ) that is located on the ***toolbar***, which will start the LogTag wizard.



The LogTag wizard performs two distinct tasks:

1 It finds the communication port (USB and/or Serial) that the LogTag is attached to through the Interface Cradle and retrieves the data that is stored within the LogTag, and

2 It allows the LogTag that is currently connected and in the Interface Cradle to be prepared for its next use.

The wizard is a key part of the software that is used for each of the steps.

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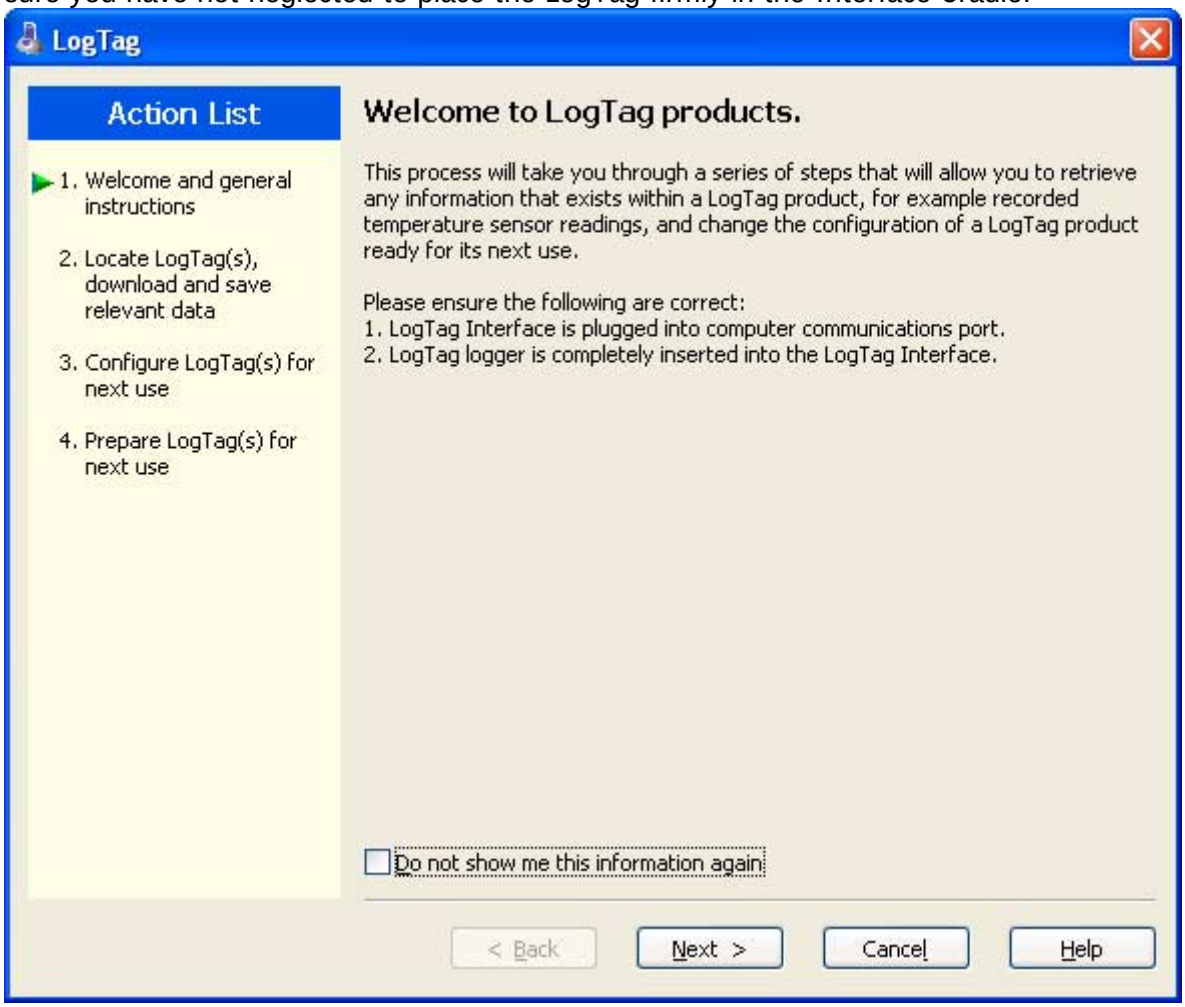
Prepare LogTag(s) for next use 27

Welcome

First the Wizard has a welcome screen (this is "1" on the Action List). This asks you to make sure you have not neglected to place the LogTag firmly in the Interface Cradle.

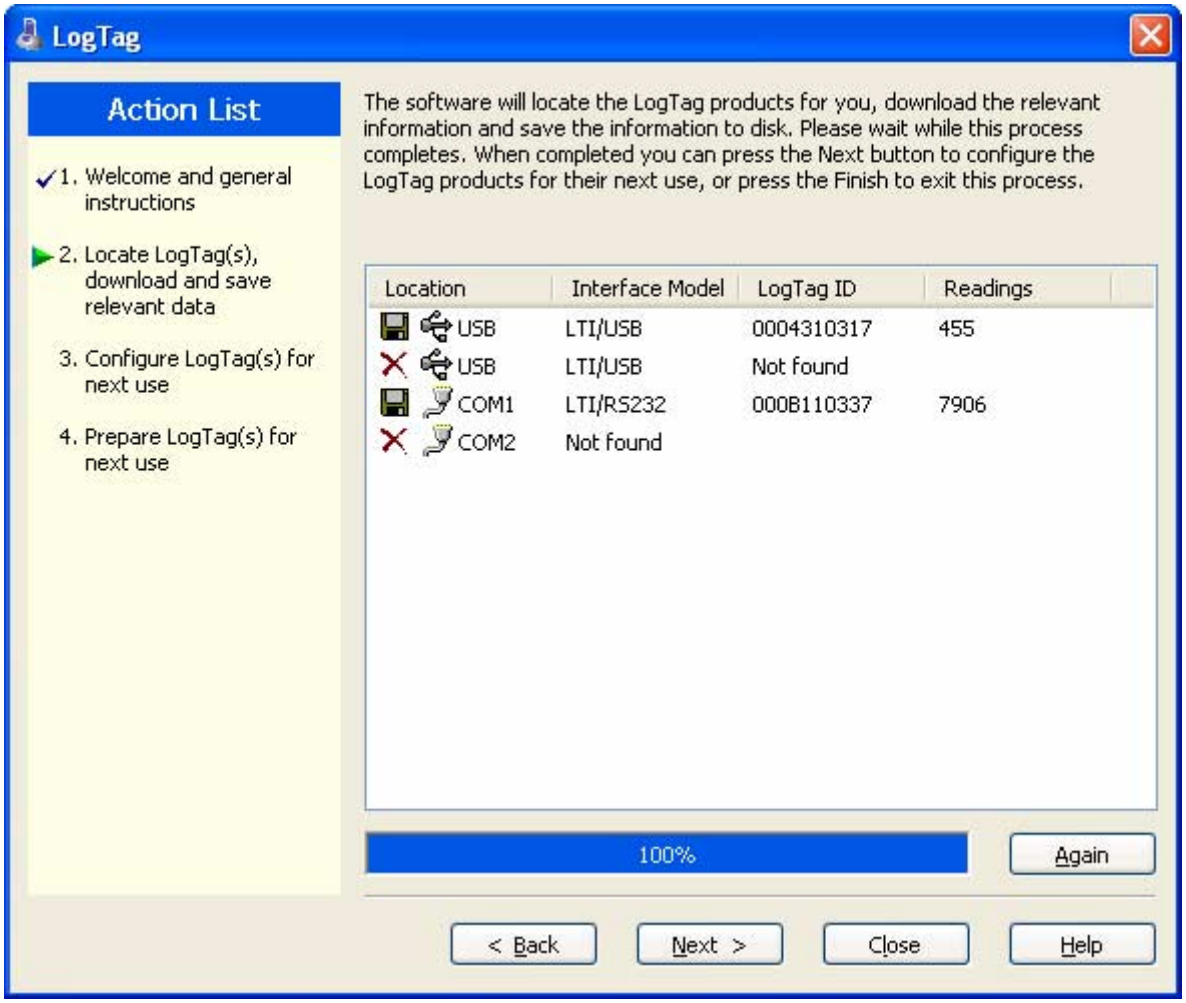


The Wizard is responsible for certain "Action Steps" and these are clearly listed at the left in the wizard window.

To get to the next screen, click on

and the next wizard screen will appear. The green arrow will indicate you have moved to Step 2.

Locate LogTag(s) download and save relevant data



In this screen you will see one of the following pictures next to each of the items in the list:

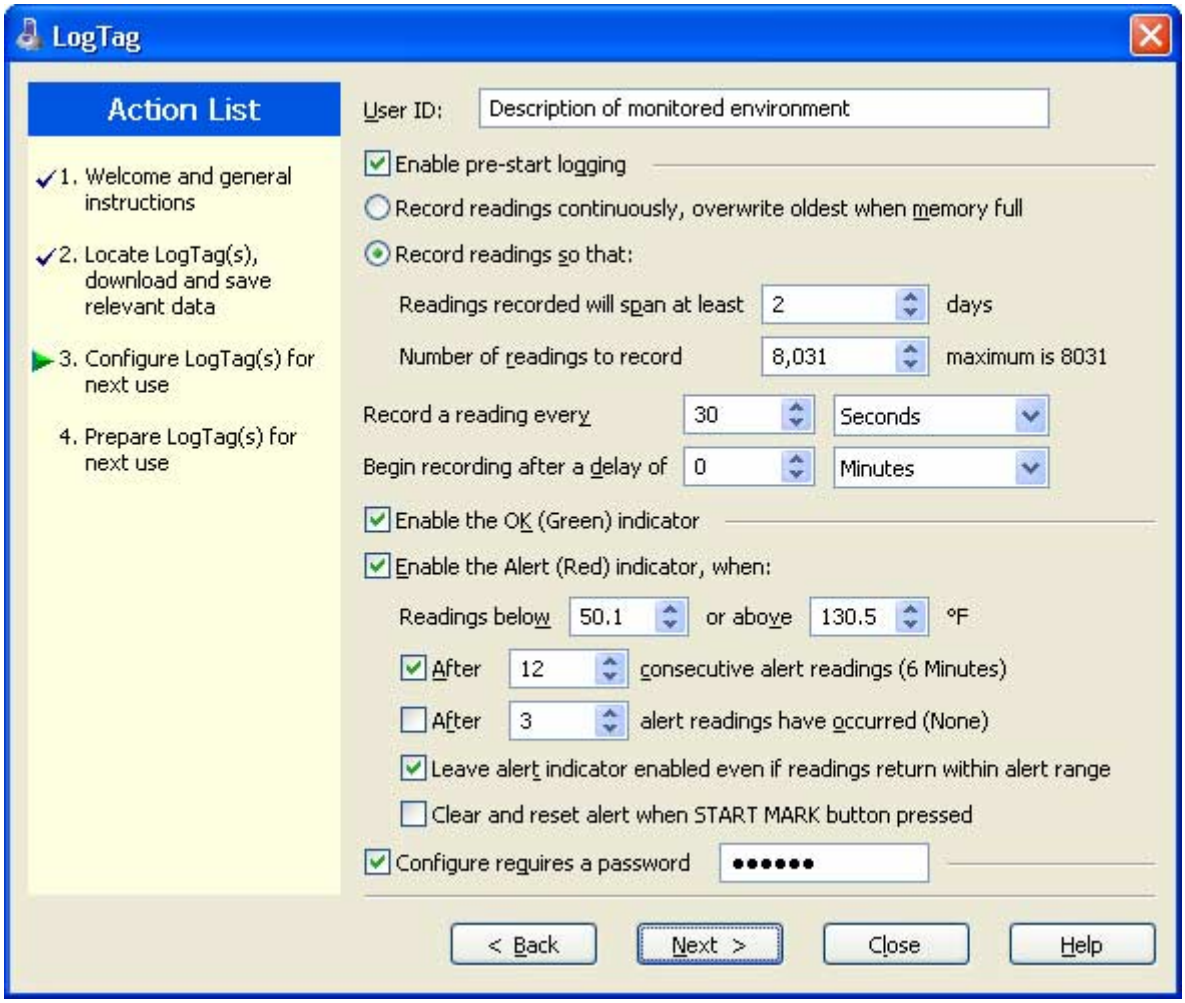
- (no picture) indicates the software is still using this communications port.
- Data was successfully retrieved from the LogTag and stored/saved to disk.
- Data was successfully retrieved from the LogTag but there was no need to save the information to disk.
- The software was unable to detect an Interface Cradle connected to the communications port or was unable to detect a LogTag in the Interface Cradle.
- The LogTag is a single use logger and cannot be prepared for use again and should therefore be returned to the supplying distributor or agent once you have finished with the LogTag. You will still be able to continue to retrieve information stored within the LogTag.

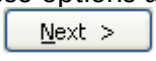
The LogTag should be almost instantly recognized by serial number and the number of readings. It is possible to have and use more than one communication port at a time and if so, the wizard will find all the LogTags.

The communication ports that are not in use (the ones that initially are reported with the mark) can be removed from view by selecting an ***option***. You don't have to do that now, but you can do it later to clean up the "wizard window" appearance.

To get to the next screen, click on Next > and the third wizard step screen will appear. The software will automatically proceed to the next wizard step, as if the user clicked on Next >, if each of the Interface Cradles detected have a LogTag detected in them and the information within the LogTag was successfully retrieved.

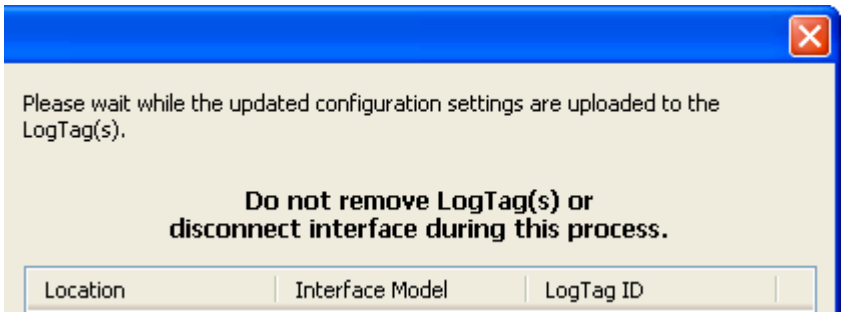
Configure LogTag(s) for next use



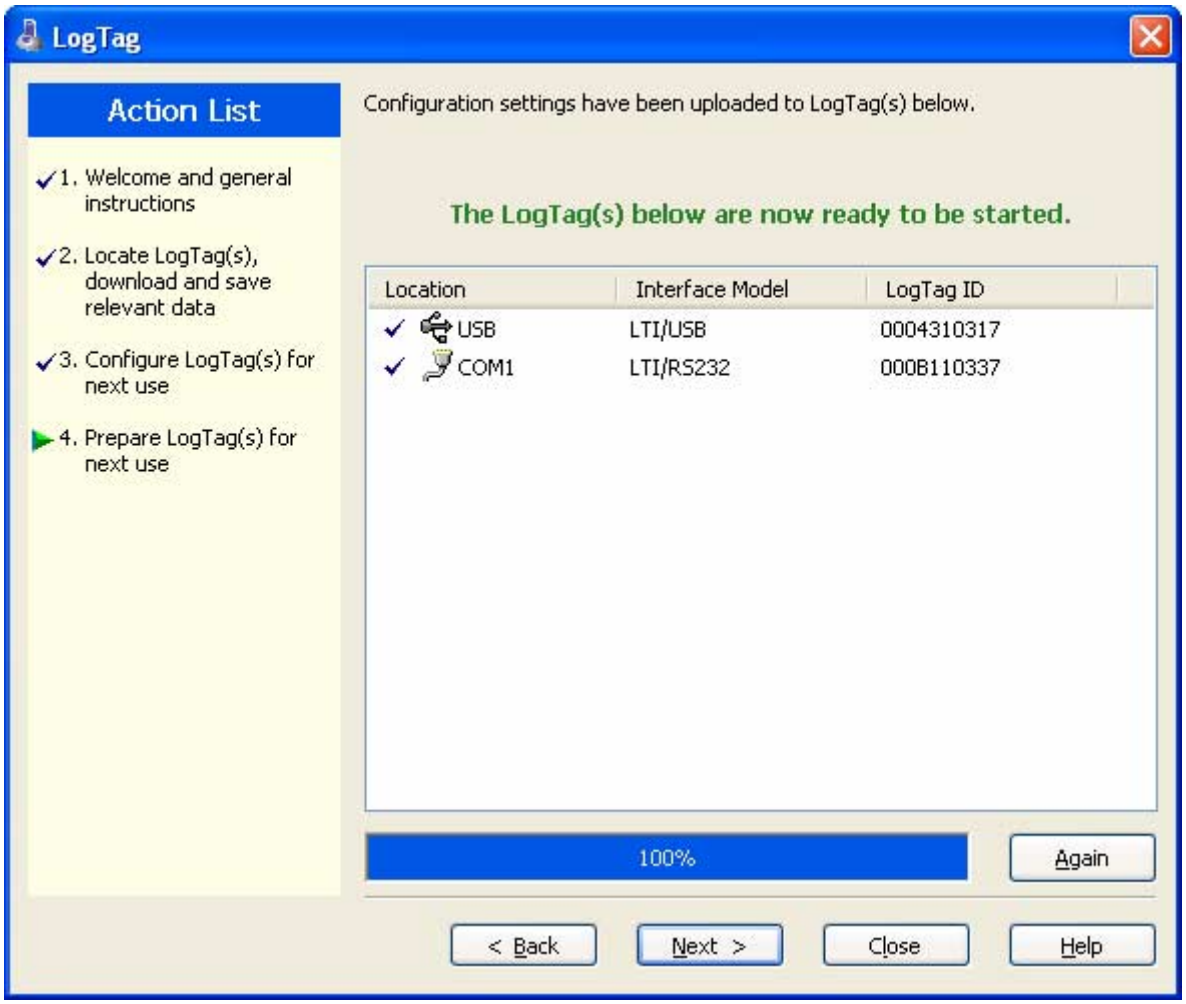
The options are available so you have appropriate control over the way the LogTags will behave and store data for the upcoming recording episode. These options are explained in more detail in the chapter "***Preparing LogTag for use***". Click  to record the configuration data and you will see the final confirmation screen.

Prepare LogTag(s) for next use

The last Wizard screen involves sending the new configuration data to each LogTag to prepare them for their next use. While the software is sending the new configuration data to each LogTag the top of the window will look similar to the following picture. The process of sending the new configuration data to each LogTag should take less than 20 seconds in total to complete.



Once the software has finished uploading the updated configuration information into each LogTag, the window displaying the progress will look similar to the following picture.



In this screen you will see one of the following pictures next to each of the items in the list:

- (no picture) indicates the LogTag is still in the process of being prepared for its next use.
- ✓ The LogTag was successfully prepared for its next use.
- ✗ The LogTag failed to be prepared for next use. Press Again to try again.
- The battery within the LogTag is low and is unlikely to have enough capacity to record all the data you want during its next use. In this situation the LogTag should no longer be used.

When all LogTags have finished receiving their new configuration data, click Close to close the wizard. Your LogTag(s) are now ready to be started and used.

Starting and using the LogTag

Once a LogTag has been successfully configured for use it is ready to be started. To start a LogTag simply press and hold the START MARK button on the LogTag until both the OK and Alert lights alternately flash on and off.

You can also have the LogTag record an "inspection" mark at any time while it is recording, simply by pressing and holding the START MARK button on the LogTag until both the OK and Alert lights flash on and off at the same time. You may have the LogTag record as many inspection marks as you want while it is recording, however only one inspection mark can be recorded per reading. In other words, if your LogTag is configured to take readings at 15 minute intervals, inspection marks can be recorded at intervals of 15 minutes or more. If the LogTag has finished recording then pressing the START MARK button will have no effect until after the LogTag has been prepared for next use.

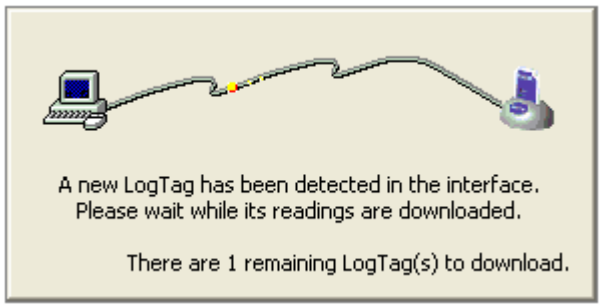
The red light on the LogTag, also called the Alert light, will regularly flash to indicate that a preset alert condition has been met and/or exceeded.

While the LogTag is recording after being started, the green light on the LogTag, also called the OK light, will regularly flash every 4 seconds to indicate that it is still recording. Once the LogTag has finished recording the green light will regularly flash every 8 seconds. However, if a preset alert condition has been met and/or exceeded then only the Alert light will flash, even if the LogTag has finished recording.

Retrieve information from LogTag

When you ready to view the recordings that are stored within the LogTag, just place the LogTag into the Interface Cradle as before. If the LogTag is still recording when you go to retrieve the readings it will continue to record without interruption so you will be able to download again later if you choose.

If the LogTag has readings stored within its memory, the software will automatically start to retrieve a copy of the recording contained within the LogTag and will also display an animated picture during the download process, similar to the following picture.



Once the readings have been successfully retrieved from the LogTag(s), the software will display the information for you. The chapter "***Results from LogTag***" explains in more detail the information that is displayed to you as a result of retrieving the recorded readings from LogTag(s).

CHAPTER 4

Preparing LogTags for use

Before you can use a LogTag to monitor and record environmental temperatures you must first prepare it for use. The process of preparing a LogTag for use allows you to define a number of parameters, including:

- How long it should record the environmental temperature for, so that you can be assured that it will record for the duration of time required. For example, if you want it to monitor a shipment that will take 10 days to deliver, you will be able to make sure it will record the temperatures throughout the entire 10 day period.
- How often it should record the environmental temperature.
- Under what conditions it should display an alert. An alert indicates when the environmental temperature being recorded is not within set limits.

This chapter explains how to prepare a LogTag for use and what the options mean.

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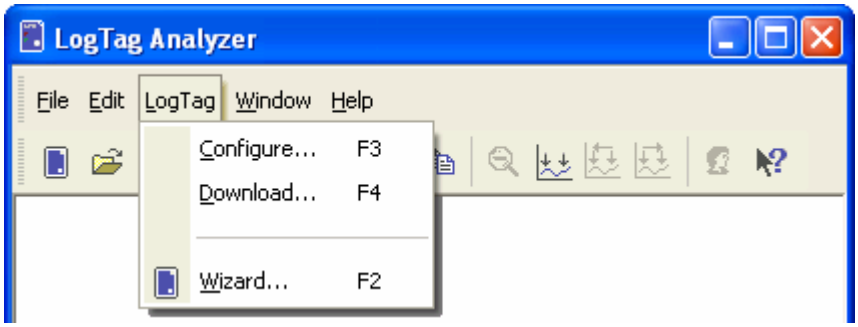
Getting a LogTag ready use

There are two ways to prepare a LogTag for use, both of which will achieve the same result. Once a LogTag has been through the configuration process to get it ready for next use, any readings previously recorded will no longer be available for retrieval.

1 Click the LogTag icon ( ) on the toolbar or the "Wizard..." menu item located in the LogTag menu.



This is the safest option, as it will retrieve any readings that are stored within the LogTag and save them to disk before getting the LogTag ready for next use. This option is useful when you are unsure whether or not the readings stored within the LogTag have been previously retrieved and saved to disk.

2 Click the "Configure..." menu item located in the LogTag menu.

This is the quickest option, as it does not involve the step that retrieves any readings that are stored within the LogTag. This option is useful when you know you have previously retrieved the readings or you no longer need a record of the readings that are currently stored within the LogTag.

The wizard will appear once you have selected the option of your choice to guide you through the necessary steps to prepare a LogTag for next use. While the wizard is visible the "Automatic download" feature will be disabled.

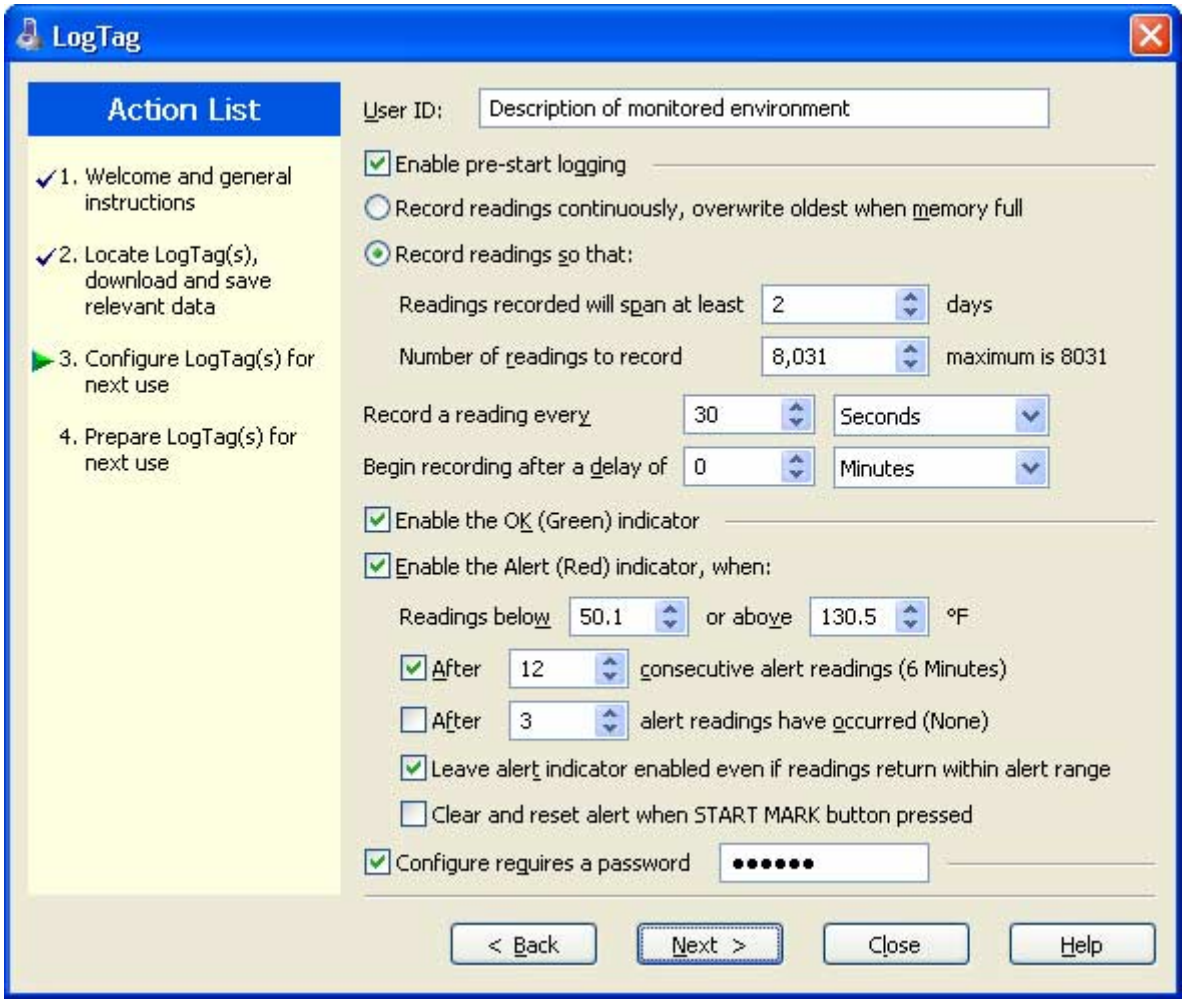
Restricted Access Requirements

Every LogTag supports an option that, when enabled, results in users being required to provide the correct password to gain further access to the LogTag. When the restricted access option is enabled, a window similar to the following picture will be displayed allowing the user to enter the correct password.

The relevant process and/or wizard will only continue successfully if the correct password is supplied by the user. Passwords are case sensitive and therefore the passwords "Bob" and "bob", for example, are different.

Preparing LogTag for next use

The "Configure LogTag(s) for next use" step provides you with all the options that can be configured to effect how a LogTag records data during its next use. Once the changes within this screen have been made, if any, click Next > to send the configuration information to the LogTag(s).



The following table describes each configurable option that is permitted to change.

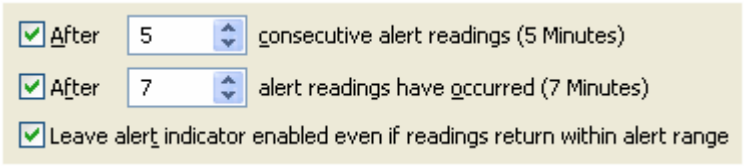
Function	Purpose
User ID	This can be used for identification of the load in transit to be monitored, or simply an identifier that describes the purpose of the monitoring. Bill of Loading information, Shipper, commodity, contact name and other relevant information can be placed here.

Enable pre-start logging	Pre-start logging is a feature that protects the recording in the event of a failure to actually press the START MARK button to initiate the recording. It is an insurance policy against the loss of critical data. This is almost always checked for transit monitoring applications. This option is further explained in the section "***Pre start data collection***".
Record readings continuously, overwrite oldest when memory full	This is what is called a “data wrap” in which the recorder just keeps writing data to memory. It is a “moving window” of data. For example, this is useful for fixed base MKT monitoring with the interval set to one year, so that the current “yearly MKT” can always be in the memory of the LogTag. If this option is selected, the user will be “opted out” of the next two options. This option is further explained in the section "***Continuous operation***".
Readings recorded will span X days	If you know how long you want to record, the Configuration screen will automatically set the number of data points collected at a particular interval.
Number of readings to record X maximum is Y	This data box will display the calculated number of readings if you select a time span and an interval. Alternatively, you can select the number of readings desired, and the time span will be altered based on the interval. A total of 8,031 data points (for the Trix-8 LogTag model) are potentially available, but with a selected interval and a selected time span, you may not need to use all of the data space. If this is selected, the logger stops logging when the number of data points has been gathered and stored in memory. "Y" represents the maximum number of readings the LogTag can store.
Record a reading every X	This determines how frequently the LogTag records the environmental temperature into its internal memory.
Begin recording after a delay of X	Determines how long after the START MARK button on the LogTag has been pressed that it will actually begin to record the environment temperature. This feature is useful for example, when the LogTag could falsely trigger an alert because the temperature environment it is being started in is quite different to the environmental temperature to be monitored. If pre-start logging is enabled, the LogTag will continue to record pre-start readings during this delay.
Enable the OK (Green) indicator	This determines whether or not the green light should function while the LogTag is recording after being started.
Enable the Alert (Red) indicator when	This determines whether or not the red light should function when an alert condition has been detected. An alert occurs when one or more of the following conditions have been met. When an alert condition has occurred, this indicator will flash at a regular interval.
Readings below X or above Y	You can set the upper threshold limit and lower threshold limit by entering the appropriate temperature information in the boxes. If the temperature does not go below X or above Y then the alert indicator will not activate.

After X consecutive alert readings (W minutes)	This feature allows the user to specify the condition that will trigger an alert. Note that the number of minutes shown will depend on the number of alert readings you enter into the box AND the recording interval already specified. For example, if X is 3 and two readings are above the upper threshold limit but the subsequent reading is below the upper threshold limit and still above the lower threshold limit then the alert indicator will not activate.
After X alert readings have occurred (W minutes)	This feature allows the user to add an additional “or” type of condition to trigger an alert. You may want to add up the total number of alert readings in addition to or instead of consecutive readings. An example of the use of this feature is included later in this section.
Leave alert indicator enabled even if readings return within alert range	If this option is enabled then the alert indicator will remain active, even if the current reading does not meet the alert conditions specified by the previous controls. If this option is disabled then the alert indicator will remain active only if the current reading meets the alert conditions specified by the previous controls.
Clear and reset alert when START MARK button pressed	This feature will turn off any active alert whenever the START MARK button is pressed on the LogTag. It will also reset the internal alert counters such that it would be as if no alert condition had occurred at all while the LogTag was recording. If however, the LogTag has finished recording all the readings, pressing the START MARK button will not clear and reset any active alert. If the LogTag being configured does not support this feature, this feature will be disabled and therefore its setting cannot be changed.
Configure requires a password	This feature allows the user to define a ***password that must be provided*** to configure the LogTag next time. If this option is enabled and the password changes, the user will be required to ***verify the new password*** when the wizard progresses to the next step. Passwords are case sensitive and therefore the passwords "Bob" and "bob", for example, are different.

When the Alert (Red) light on the LogTag flashes it means that a preset alert condition has been exceeded. These configuration options allow you to determine how many readings above or below selected limits are required for an alert on the LogTag to be triggered. These can be set for consecutive readings beyond the limits and/or total readings beyond the limit. So, if the red light is flashing, its meaning is based on how the LogTag has been programmed.

For example, we may have configured a LogTag to flash the alarm if there were 5 continuous out-of-range readings or 7 total out-of-range readings.



This would yield the following response:

What happened	Result
2 out-of-range, return to normal, 2 out-of-range, return to normal, 2 out-of-range, return to normal	No Flashing Red Alarm Light
4 out-of-range, return to normal, 4 out-of-range	Flashing Red Alarm Light
4 out-of-range, return to normal, 2 out-of-range	No Flashing Red Alarm Light

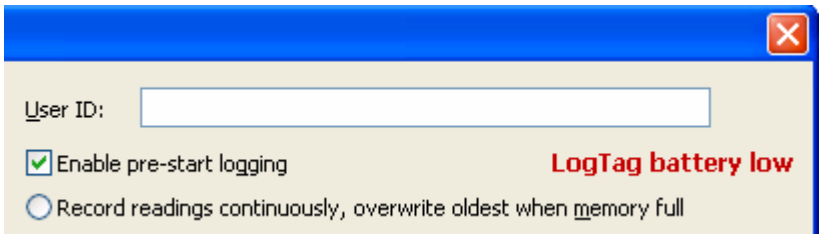
In the first instance, the alert criterion is NOT met because the total out-of-range events equals 2 + 2 + 2 = 6. The alert condition is 7 total, so the alert does not go off.

In the second instance, the alert criterion is met because the total out-of-range events equals 4 + 4 = 8. The alert condition is 7 total, so the alert DOES go off.

In the third instance, the alert criterion is NOT met because the total out-of-range events equals 4 + 2 = 6. The alert condition is 7 total, so the alert does not go off.

Matching these to known conditions of interest in your monitoring program may require some information about the effects of exposure to different durations of out-of-range temperatures.

If the battery within the LogTag is detected to be low and therefore not recommended for further use, the software will display a warning to you in the top right corner, like the following example.



Verify Access Password

When configuring a LogTag for its next use, if the user enables the "***Configure requires a password***" option and/or changes the password to restrict access to the LogTag, then the user is required to verify the password to be defined before it will be stored in the LogTag. The window that will appear to verify the password will be similar to the following picture.

Once a password has been stored in the LogTag, further access to it can only be achieved by providing the correct password. Therefore, if a password is forgotten further access to the LogTag will not be possible. Passwords are case sensitive and therefore the passwords "Bob" and "bob", for example, are different.

Pre-start data collection

The LogTags support a feature called "pre-start logging", which can be selected during configuration.

When pre-start logging is enabled the LogTag will automatically start logging as soon as configuration is completed. It will record at the same sampling interval as defined in the configuration and will continue to record until the user starts the LogTag by pressing the START MARK button on the LogTag. Once the LogTag has been started, it will record as per the configuration settings. While the LogTag is recording pre-start readings the Alert LED on the LogTag will not activate if an alert condition is detected.

Pre-start logging is useful as a fail-safe recording setting so if the LogTag is not started at the appropriate time, the readings will still be available to view later.

When the readings are retrieved from the LogTag, any pre-start readings will be identified as pre-start readings so the user can quickly identify the readings recorded before and after the LogTag was started.

All LogTags have a finite amount of memory to store the readings it records. Therefore, while the LogTag is recording pre-start readings the LogTag will operate in its 'continuous operation' mode, which is explained further in the section "***Continuous operation***". Once the memory within the LogTag is full the oldest pre-start reading will be overwritten with the latest reading recorded, regardless of whether the reading recorded is a pre-start reading or a reading to be recorded after the LogTag has been started.

Continuous operation

All LogTags have a finite amount of memory to store the readings that are recorded. When the LogTag is recording readings continuously it will not stop once the memory within the LogTag is full of readings. Rather it will replace the oldest reading stored within the LogTag with the latest reading so that only the most recent readings are maintained in the LogTag memory.

Working with batches of LogTags

You may find that at some stage you need perform a similar task on multiple LogTags, whether it is retrieving readings stored within the LogTags and/or preparing them for their next use. The LogTag Analyzer software has been designed to make the effort involved with multiple LogTags as simple as possible.

To retrieve a copy of the recorded readings stored within multiple LogTags, simply insert each LogTag to download into the Interface cradle. The software will then automatically retrieve the recorded data from the LogTag, save it to disk and then display the information for you. Therefore, you will be able to retrieve the recorded readings stored from within one or more LogTags without needing to interact with the software and/or computer.

To prepare multiple LogTags for use you can use the "Wizard..." or the "Configure..." wizard, available in the "LogTag" menu, depending on whether or not you want to retrieve and save a copy of any readings recorded within the LogTags you are about to use. Simply prepare the first LogTag(s) as per usual and at the conclusion of the last step remove the LogTag(s) from their Interface Cradle, place the next LogTag(s) to be prepared for their next use into an Interface Cradle and click

. Therefore, you will be able to prepare multiple LogTags for use with minimal interaction with the software and/or computer.

Getting the best from your LogTag

Many users of temperature loggers are used to attaching the logger to a hook or tie-wrapping them to a monitored object. A wide variety of attachment methods can be used with the hole on upper right hand corner of the LogTag, such as bolting the LogTag in position, attaching it to a packaging strap, using a car-seal for security or other means.

The hole is quite strong, so most means of attachment will not compromise the structural integrity of the LogTag. We do, however, recommend that the dead weight stress on the hole itself not exceed 5 pounds (2 Kg).

The sensor for the LogTag is also very responsive, so we recommend you position the LogTag in a location, where it will not be susceptible to changes in temperature due to operational activities. For example, it is not recommended you place a LogTag beside a door way, as every time someone passes through the door, the LogTag will register the change of environmental temperature due to the breeze that will be generated by the person, which does not necessarily reflect the overall temperature of the environment been monitored.

CHAPTER 5

Results from LogTag

The LogTag stores the recorded temperature readings in its internal memory. Since the LogTag contains the recorded readings in its internal memory, you must use the LogTag Analyzer software to extract the information from the LogTag through the Interface Cradle and into a format that can be displayed to you in a meaningful way. It is usually very important that the information retrieved from a LogTag is retained. The software will automatically save the information retrieved from a LogTag to your disk drive so that you can view the information at a later date, a useful feature if you require traceability. This chapter explains how you can retrieve the recorded information stored within a LogTag and have the software display it to you on the screen in a meaningful way.

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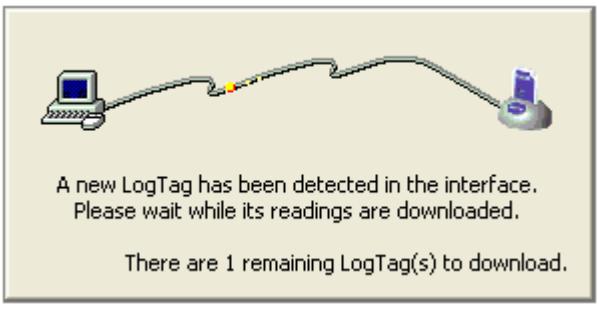
Getting results from LogTag

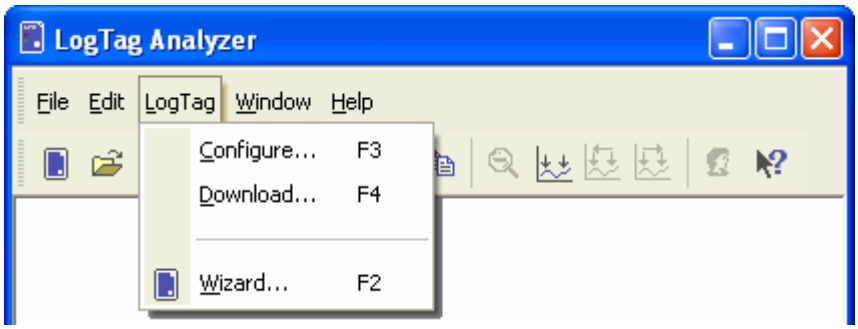
You can retrieve the recordings from LogTag(s) as many times as you require. The process of retrieving data stored within a LogTag does not erase it from the LogTag's memory. If the LogTag is currently recording while you retrieve the information, it will continue to record without interruption.

There are three ways to retrieve the recorded results from a LogTag.

1 While the LogTag Analyzer software is open (does not need to be the currently active software), simply slot the LogTag into the Interface Cradle. If the automatic download feature is enabled, the software will automatically retrieve the recorded readings, save the information to your disk drive and display the information to you. While the software is automatically retrieving the readings you will see an animated picture appear, similar to the following picture.



2 Click the "Download..." menu item located in the LogTag menu.



This is the second quickest option, as it does not include the steps involved in preparing the LogTag(s) for their next use.

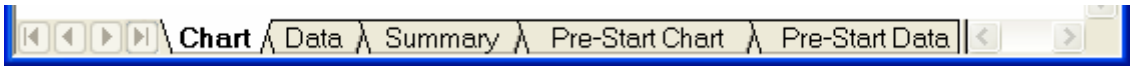
3 Click the LogTag icon ( ) or the "Wizard..." menu item located in the LogTag menu.

This option will allow you to prepare the LogTag for its next use after retrieving the readings stored within the LogTag. If you do not need to configure the LogTag for its next use now, the previous option described may be preferred as it will not involve the configuration steps and therefore be a quicker and simpler method.

The wizard will appear once you have selected the appropriate option of your choice to guide you through the necessary steps to retrieve the recorded readings. While the wizard is visible the "Automatic download" feature will be temporarily disabled. You will not be able to access any of the Wizards while an "Automatic download" is in progress.

Understanding the results

The Data Screen is an all purpose data display. The window appears inside the main LogTag Analyzer window, and has a series of tabs along the bottom. Each of these tabs changes the Data Screen display.



The different display types are:

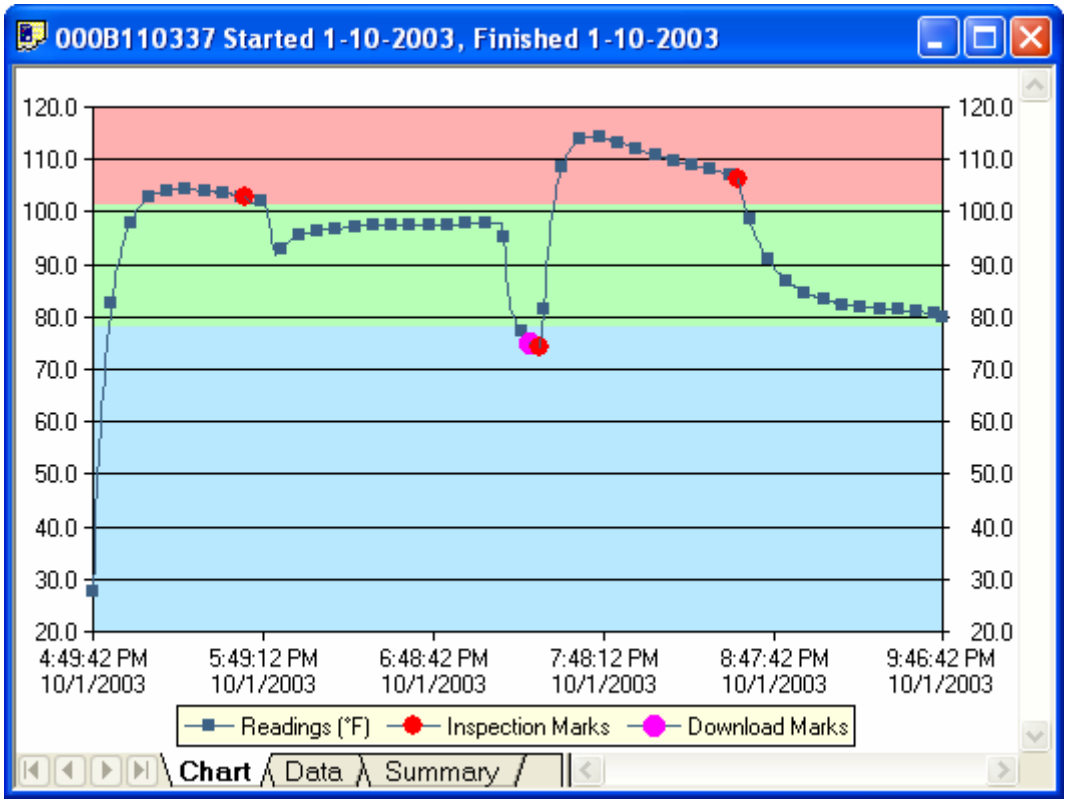
Chart	A display of the data in a time-temperature chart.
Data	A listing (spreadsheet style) of the time-temperature data.
Summary	A summary of the data, including averages, ranges, alert results, LogTag identification data, and other information.
Pre-Start Chart	A chart of data stored by the LogTag prior to it being started.
Pre-Start Data	A listing of the data stored by the LogTag prior it being started.
Pre-Start Summary	A summary of the data stored by the LogTag prior to it being started.
All Chart	A chart of the all of the data stored in the LogTag including the data prior to it being started and after being started.
All Data	A listing of the all of the data stored in the LogTag including the data prior to it being started and after being started.
All Summary	A summary of the all of the data stored in the LogTag including the data prior to it being started and after being started.

The screens that are typically used are the first three (Chart, Data and Summary), since they represent the normal usage of the LogTag. The other Data Screens are included to deal with situations where the LogTag may have not been activated due to user error; the data is still collected and available. LogTags may be handled by those who are unfamiliar with the start feature. The "***pre-start logging***" feature protects against accidental "no starts" to preserve data that may be valuable.

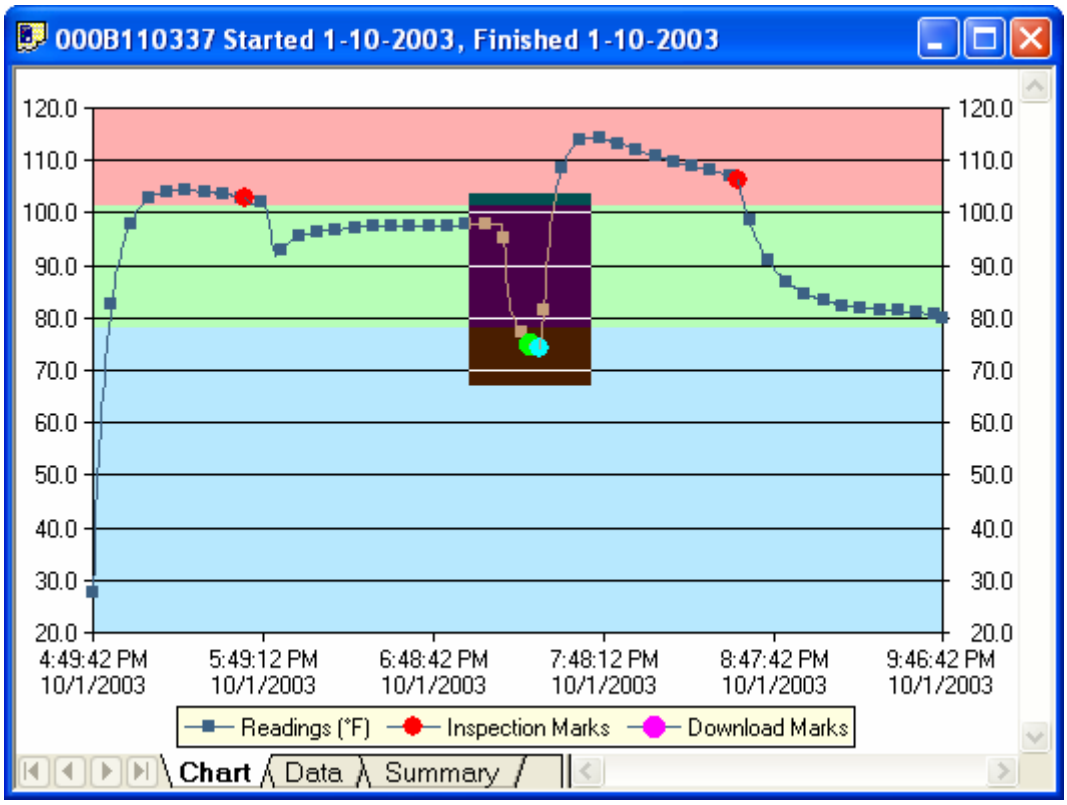
In some cases, not all the "tabs" previously described will be displayed, for example you may only see Chart, Data and Summary. If the LogTag has been configured to not record any pre-start data, the downloaded data will not display any; you will only see the data that has been set up in the "configured mode" and recorded after starting the LogTag. Pre-start recording is an option, not a default. Also if the LogTag was configured to record continuously and the data has wrapped in memory all the pre-start data would have been replaced with more recent data and as such there will be no pre-start data left to display.

Inspecting the information at close range

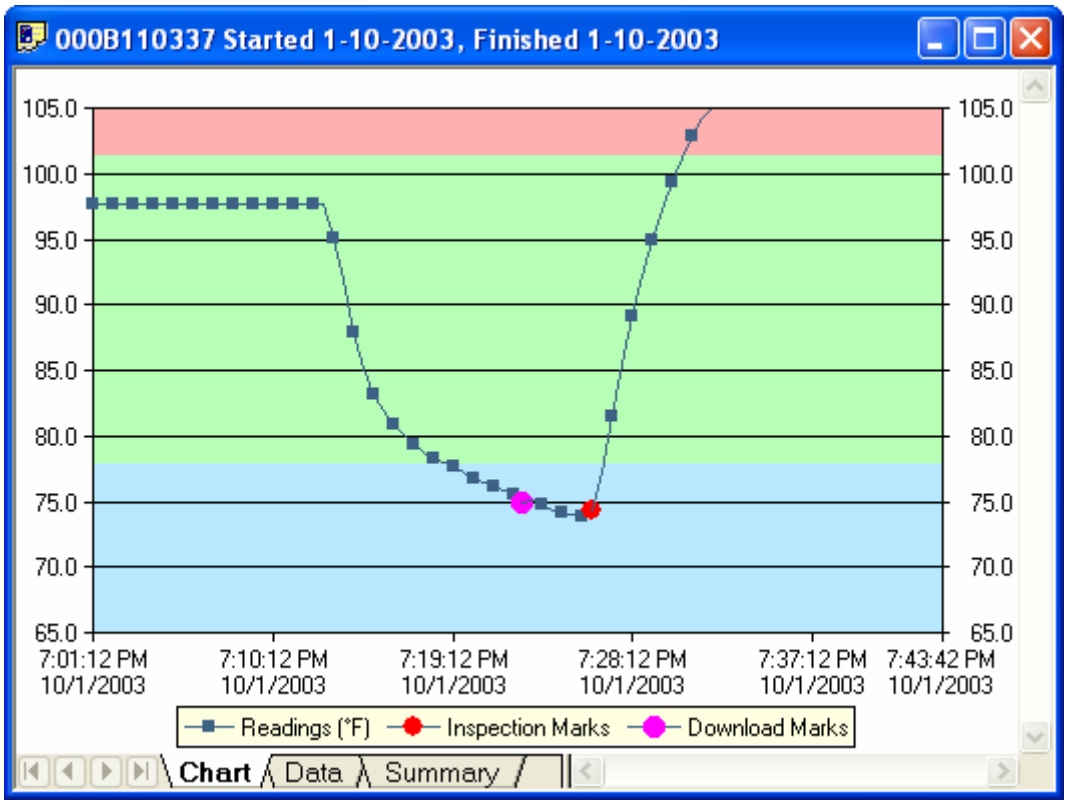
When a file is displayed either from downloading or from calling up a stored data file, the file typically appears as a chart. It might look something like this:



The display does not show all of the available data points. For more detail, you can zoom in and display just one small section of the charted data. Using the mouse, find the upper left corner of a window of interest, hold down the left mouse button, and move the mouse to the bottom right corner. The zone of interest will be highlighted.



The highlighted zone is immediately displayed after the left mouse button is released on the maximum displayable resolution:



This display now shows the maximum detail from the highlighted area.

When this mouse operation has been completed, for example, a picture of the highlighted area can be placed on the clipboard. This picture can be then be pasted into any Microsoft Windows® application. For example, if you are writing a letter and want to illustrate a point based on chart data from a LogTag, you can paste the picture of the chart directly into the letter.

Whenever the data displayed on the chart has been zoomed in to show more detail and is showing only a portion of the charted data, if you click on the corresponding Data tab you will see that only the readings shown on the chart are currently displayed. If you also click on the corresponding Summary tab you will see an additional section of statistics that have been calculated based on only the portion of readings currently being shown on the Chart screen. Following is an example of the additional section of statistics that will appear within the Summary Screen when a section of the readings within the Chart screen have been zoomed in.

Statistics of zoomed range of readings	
First reading	1/10/2003 4:23:42 p.m.
Last reading	1/10/2003 6:41:12 p.m.
Elapsed Time	2 Hours, 17 Minutes, 30 Seconds
Reading range	23.2 to 45.6 °C
Average reading	36.2 °C
Standard Deviation	4.36 °C
Degree Minutes below lower alert	10.65 °C
Degree Minutes above upper alert	82.35 °C
Mean Kinetic Temperature	37.04 °C
Time below lower alert	8 Minutes
Time above upper alert	37 Minutes, 30 Seconds
Time not in alert	1 Hour, 32 Minutes, 30 Seconds

The Zoom Out ( ) command in the ***Edit menu*** or on the ***toolbar*** can be used to revert the display back to showing the range of data points that were showing prior to the new zoom section being selected.

Inspection marks are recorded each time the START MARK button is pressed on the LogTag. Each inspection mark is numbered and can be identified by counting the number of marks on the Chart display. If you click on the corresponding Summary tab and scroll down in the data record you will see a summary of all the points that were recorded between each subsequent inspection mark. Following is a picture of a portion of a Summary Screen showing the relevant information for the sequence of data points between the inspection mark #2 and inspection mark #3.

Statistics for between inspection mark #2 and inspection mark #3:	
First reading	1/10/2003 4:12:51 p.m.
Last reading	2/10/2003 11:13:21 a.m.
Elapsed Time	19 Hours, 30 Seconds
Reading range	-14.6 to 36.2 °C
Average reading	-13.3 °C
Standard Deviation	2.43 °C
Degree Minutes below lower alert	0.00 °C
Degree Minutes above upper alert	347.95 °C
Mean Kinetic Temperature	-11.28 °C
Time below lower alert	None
Time above upper alert	49 Minutes, 30 Seconds
Time not in alert	18 Hours, 11 Minutes, 30 Seconds

Automatically calculated statistics

When a file is displayed either from downloading or from calling up a stored data file, the software will automatically calculate and display some statistics about the recorded data. The statistics that are calculated are shown on the corresponding Summary tab and are also calculated for each sequence of data points between the inspection marks.

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Average Reading

The Average Reading is the arithmetic mean of the sequence of data points. It is calculated by adding all the data point values together and then dividing the total by the number of data points. Mathematically this formula can expressed as illustrated in the following picture:

$$av = \frac{\sum_{i=1}^{n} t_i}{n}$$

Where:

av the calculated arithmetic mean

n the number of data points to include in the calculation

t_i a data point to include in the calculation

For example, if there were 5 data points to calculate the arithmetic mean of and they were, 12.3, 15.9, 16.2, 14.7, 14.9, then the arithmetic mean would be 14.8.

Standard Deviation

The standard deviation is a useful for determining how spread out the readings are from the arithmetic mean (Average Reading). Most temperature controlled environments typically try to keep the environmental temperature at a stable and consistent temperature. The standard deviation can be used to help indicate how stable the temperature was maintained. One standard deviation (sometimes expressed as "one sigma") away from the mean, positive or negative represents approximately 68 percent of all the data points. Two standard deviations, or two sigmas, away from the mean represents approximately 95 percent of the data points. Three standard deviations represent about 99 percent of the data points.

For example, if the arithmetic mean of the data points was 50.6°C and the standard deviation was 2.3°C, then approximately 68% of the data points are between 48.3°C and 52.9°C, 95% of all the data points are between 46.0°C and 55.2°C and 99% of the data points are between 43.7°C and 57.5°C. Further more, if all the readings were recorded over a span of 1 day (24 hours) then the temperature was between 48.3°C and 52.9°C for approximately 16 hours and 19 minutes during the recorded period of time.

Mathematically the formula for calculating the standard deviation can expressed as illustrated in the following picture:

$$s = \sqrt{\frac{\sum_{i=1}^{n} (t_i - av)^2}{n - 1}}$$

Where:

s	the calculated standard deviation
n	the number of data points to include in the calculation
av	the calculated arithmetic mean
t_i	a data point to include in the calculation

For example, if there were 5 data points to calculate the standard deviation of and they were, 12.3, 15.9, 16.2, 14.7, 14.9, then the standard deviation would be 1.54

Mean Kinetic Temperature

There are some products and materials that exist which have accelerated rates of degradation at higher temperatures. For example, perishable food items, pharmaceutical products and many forms of bacteria can grow/degrade exponentially as the environmental temperature increases. Mean kinetic temperature is a calculation that accommodates the non-linear thermal effect temperature can have on products. Mean kinetic temperature is represented as the equivalent temperature the product was thermally subjected to during the period of time the various temperature reading were recorded.

Mathematically the formula for calculating the mean kinetic temperature can expressed as illustrated in the following picture:

$$mkt = \frac{-\frac{\Delta H}{R}}{\ln\left(\frac{\sum_{i=1}^{n}\exp\left(\frac{-\Delta H}{R\times(t_i+273.15)}\right)}{n}\right)} - 273.15$$

Where:

mkt	Mean kinetic temperature, in degrees Celsius
ΔH	the activation energy. LogTag Analyzer uses an activation energy value of 83.144 KJ/mol for the calculation.
R	the universal gas constant, which is 0.0083144 KJ/mol K
n	the number of data points to include in the calculation
t_i	a data point to include in the calculation, in degrees Celsius

For example, if there were 5 data points to calculate the mean kinetic temperature of and they were, 12.3, 15.9, 16.2, 14.7 and 14.9 degrees Celsius, then the mean kinetic temperature would be 14.9 degrees Celsius.

Degree Minutes

There are some products and materials that exist which can change their characteristics and/or degrade if they experience temperatures which are not within ideal conditions for long enough. For example, some products may experience freezer burn if they experience an extremely cold condition or experience a colder than ideal temperature for long enough period of time. Other products for example, ice cream, change their characteristics if they experience temperatures which allow it to melt. The LogTag Analyzer will automatically display the results of two separate Degree Minutes calculations. The result of the first Degree Minutes calculation displayed will be based on the readings that were recorded below the ideal conditions and the result of the second Degree Minutes calculation displayed will be based on the readings that were recorded above the ideal conditions. The ideal conditions used in the calculation of the Degree Minutes formula are based on the upper and lower alert values that where configured when the LogTag was originally prepared for use.

Mathematically the formula for calculating the degree minutes above alert can be expressed as illustrated in the following picture:

$$\deg\min = \sum_{i=1}^{n} abs(t_i - a) \times s$$

Where:

degmin Total Degree Minutes spent above/below the alert threshold.

t_i The temperature that was above/below the alert threshold.

a The alert temperature threshold.

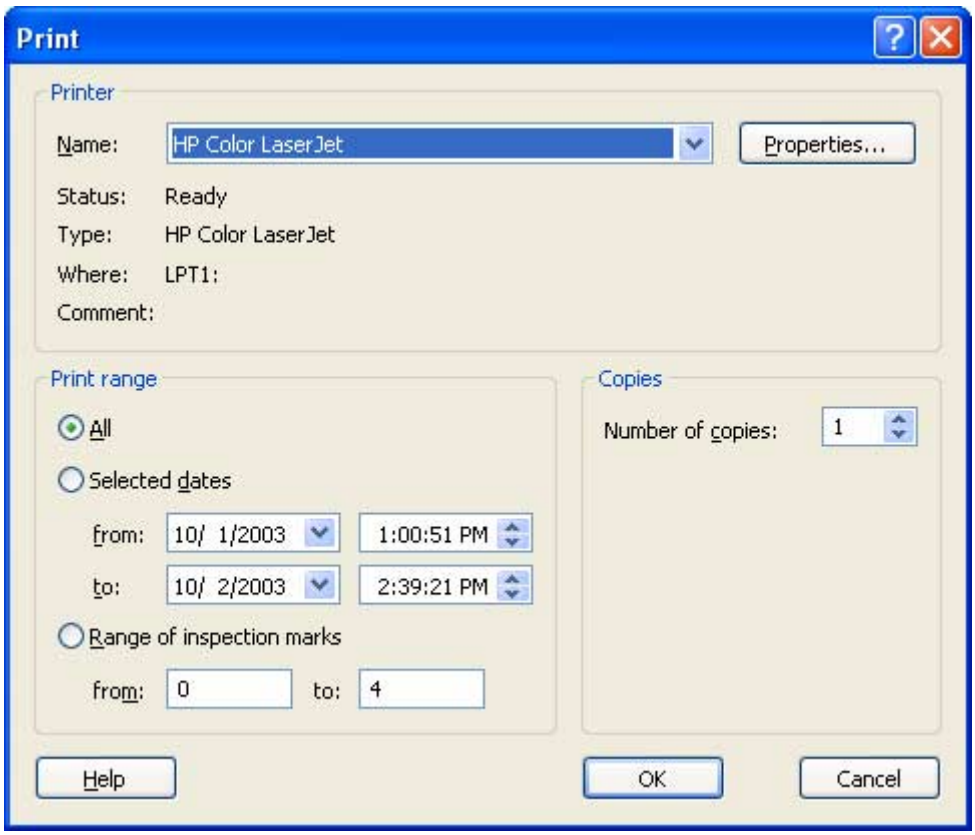
s The duration of time, in minutes, the temperature was sustained.

For example, if there were 5 data points to calculate the degree minutes of and they were, 12.3, 15.9, 16.2, 14.7 and 14.9 degrees, each of these temperatures were recorded at 2 minute intervals and the high alert temperature threshold was 12.6 degrees, then the degree minutes temperature above the upper alert threshold would be 22.6 degree-minutes.

Printing the results

Printing from LogTag Analyzer is slightly different to printing from other common Windows software, as the printer functions in terms of range of information to print rather than range of pages. This technique allows you to focus on what you want printed rather than the pages showing the information.

You can choose to print all of the information, select a range of dates and times to print from or select a range of "inspection" marks. This could be a very important for transit temperature monitoring since post trip and pre-event data are not significant to a discussion or dispute centering on a temperature maintenance issue.



The print window can be brought up by simply clicking once on the "Print" icon (🖶) located on the ***toolbar*** or by clicking the "Print..." menu item from within the File menu.

Sending a file by email direct from Analyzer

You can send files of interest to another person, by email, directly from the software without the need to exit to your email software or to deal with file attachments.

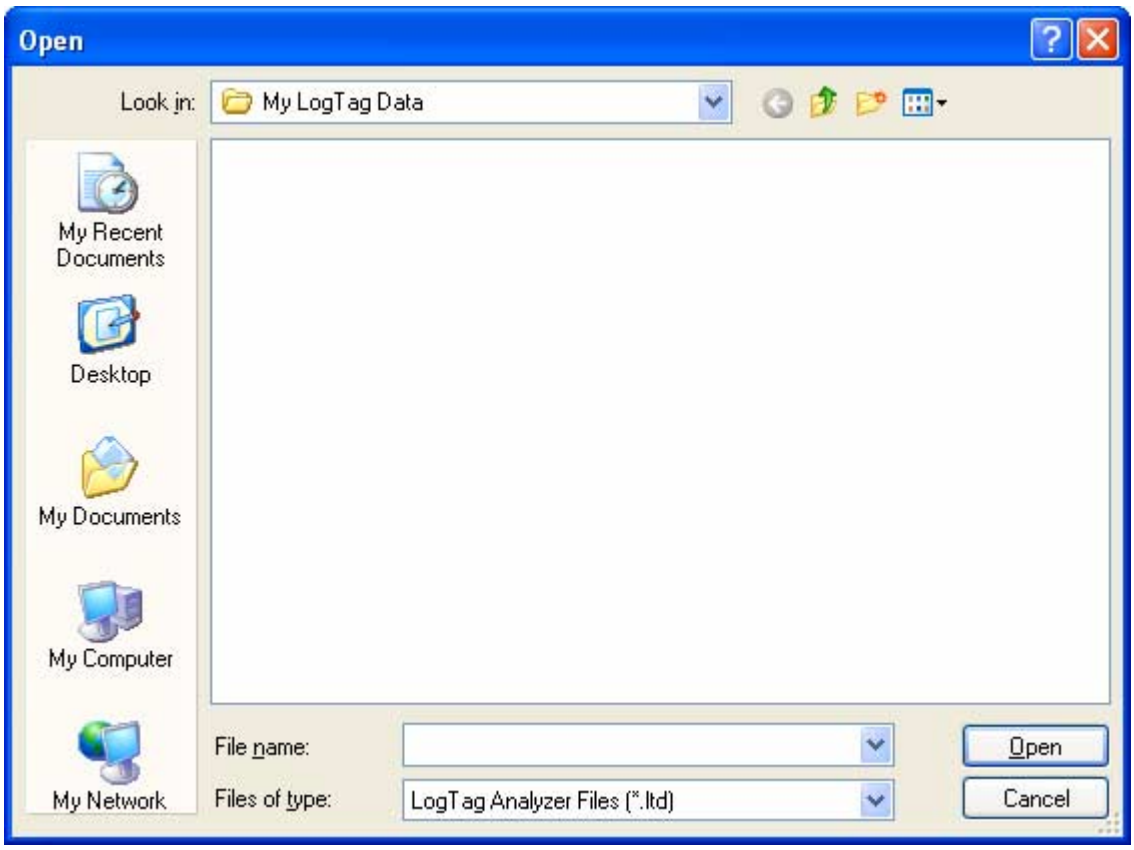
While you have the file of interest open and being displayed on the screen, just click once on the "Send Mail" icon ( ) located on the ***toolbar*** and your email software will pop up with the file already inserted as an attachment. Type the desired email address to send the file of interest to, add any message that you wish to include, and then click "Send". That is all.

Clicking the "Send..." menu item within the File menu will achieve the same results as clicking the "Send Mail" icon as previously described.

Note, the recipient of the file will also need to have a copy of the LogTag Analyzer software to open and view the file that you sent. LogTag Analyzer software is free and can be downloaded from the LogTag Recorders Internet site, www.logtagrecorders.com.

Calling up previous results

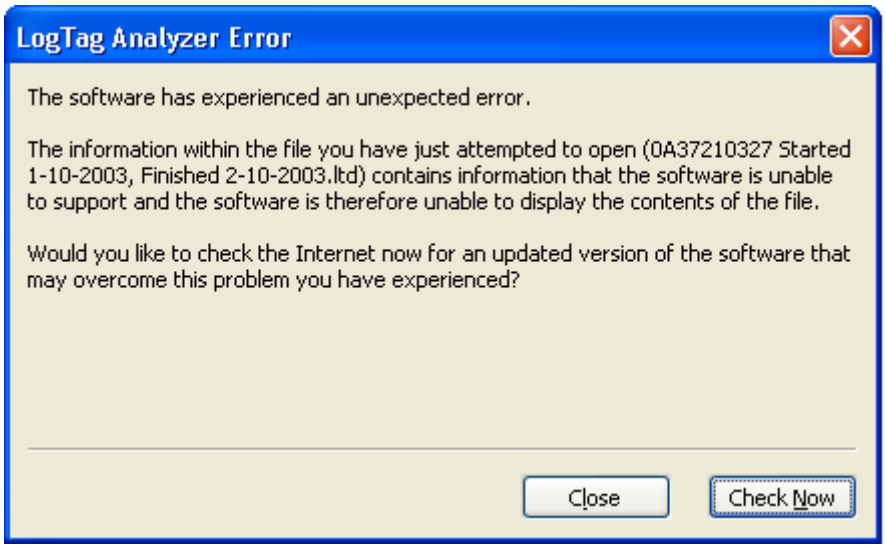
The files that have most recently opened and displayed are listed towards the bottom of the "***File***" menu. To open other files, click the "Open" icon ( ) located on the ***toolbar***, which will display the "Open" file dialog similar to the following picture and allows the user to locate and open one or more files of interest.



Clicking the "Open..." menu item within the File menu will achieve the same results as clicking the "Open" icon as previously described.

After the software has been installed for the first time, there are two recently opened files listed in the "File" menu, even though no files have been opened yet. These are sample files, which were installed along with the software so that users can see an example of information that can be retrieved from LogTags. These files are not required for the correct operation of the software and therefore may be deleted at any time.

If the software is unable to open the file, it will display an error similar to the following picture. Clicking on Check Now will being the process of checking the Internet for an ***updated copy of the software***.

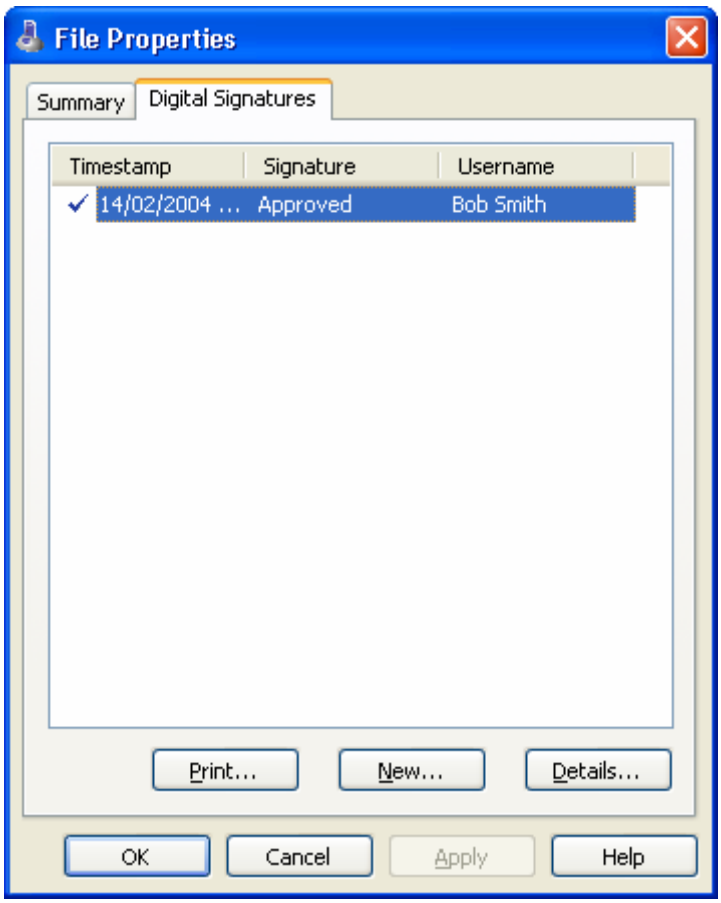


Digital signatures

Support for digital signatures is primarily provided for compliance with the US FDA 21 CFR Part 11 regulation - Electronic records and electronic signatures. Various industries however, may find inclusion of digital signatures beneficial towards their quality control and assurance systems.

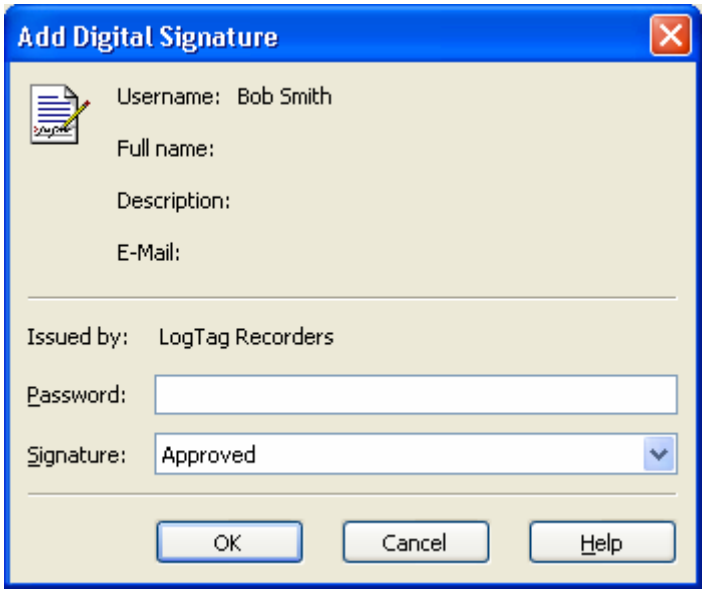
Digital signatures allow users to include their digital signature within a LogTag Analyzer file along with a meaning/reason for the inclusion of the digital signature. To add digital signatures to LogTag Analyzer files, the copy of the LogTag Analyzer software being used must be connected to the LogTag User Server software. For more information about how to get the software to connect to the LogTag User Server software see the "***User Server***" set of options settings and/or contact your local network administrator.

While the file that the digital signature is to be added to is open and currently selected, add a digital signature by clicking on the "Digital Signatures" icon ( ) located on the ***toolbar***, which will display the "File Properties" dialog with the "Digital Signatures" tab already activated, similar to the following picture.



Then click New... to begin the process of adding a digital signature to the file. If New... is disabled, moving the mouse pointer over New... and leaving it still for a short time will revel the reason why the button is disabled.

Once the "Add Digital Signature" dialog is visible, enter your LogTag Analyzer user password and the select the meaning for the digital signature that is being added.



Click OK to permanently add the digital signature to the file or Cancel to not add the digital signature. Multiple digital signatures from the same and/or different users to LogTag Analyzer files may be added to a single file.

How secure is my data

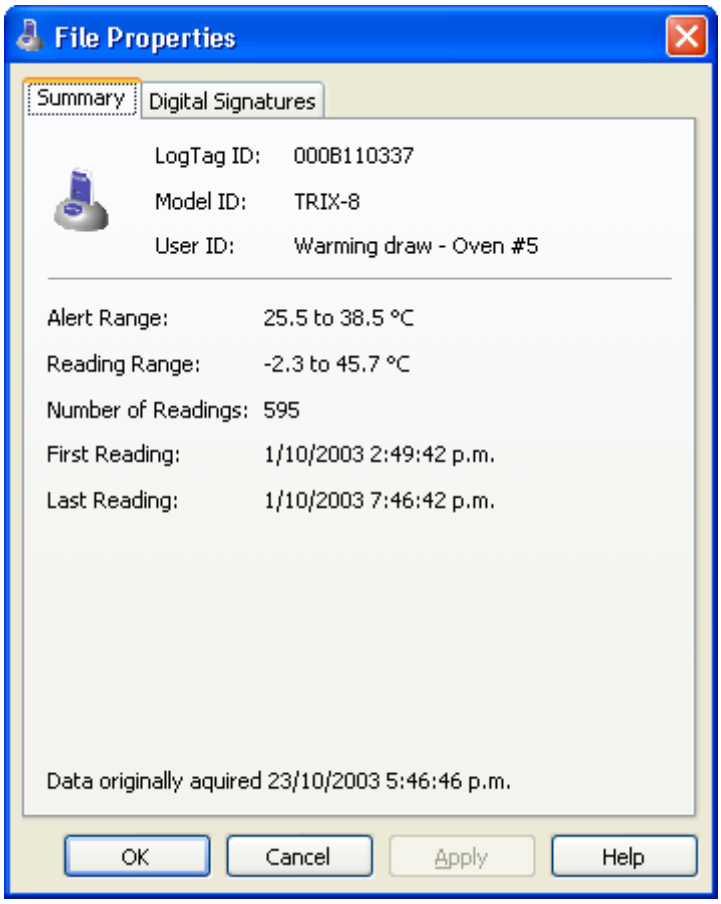
All LogTag files are encrypted and contain checks to detect if the file has been tampered with since it was originally created. If the software detects that a file has been tampered with, even by only one character or has become corrupted and therefore the data within does not represent the data originally retrieved from the LogTag, the software will not open the file and display the information within.

Since the software does not modify any of the recorded data within a LogTag file at any time, if the software can open the file, regardless of how long ago it was created, the contents of the file will still represent the original recorded information retrieved from the LogTag.

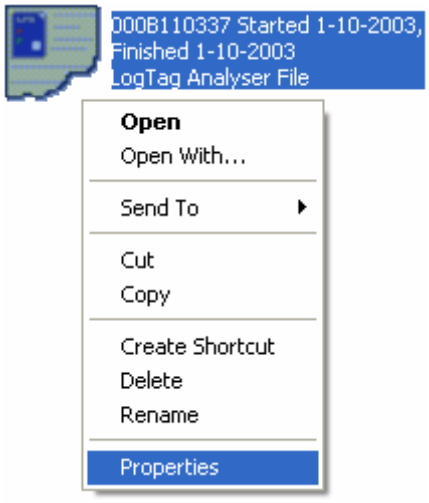
Therefore, the files created by the LogTag Analyzer software meet all criteria for data integrity and data security as set forth in the US FDA 21 CFR Part 11 regulations. The firmware code that is embedded in the processor chip of each LogTag cannot be extracted or reverse-assembled. Accordingly, data sets that are recorded on the memory within the LogTag cannot be downloaded or modified except by being transferred to a LogTag file. There is no way to interfere with the process of the transfer of information between the LogTag and the software in such a way that data integrity would be compromised.

Viewing file properties

The file properties, which is accessed through the ***File Menu*** and/or through the toolbar command, provides users with a brief summary about the data included within the file, as indicated in the following picture.



This file properties information is also available for viewing directly through the Windows Explorer software that was included with the Windows operating system, without the need to have the LogTag Analyzer software open. To view the information, simply locate the file of interest with Windows Explorer and, using the mouse, click the right button over the file and select the "Properties" menu item, with the left mouse button, from the menu that will be displayed, similar to the following picture.



Select the "Summary" tab and you will see the summary of the data contained in the file. If the contents of the file require a newer version of software to open and view, have become corrupted or have been modified then the "Summary" tab will not be visible.

CHAPTER 6

Customizing the software

In the "Edit" menu is a command called "Options...".

This menu command opens a Window, which will allow the many of the features that the software offers to be customized. The following sections will provide an explanation of each of these options so that users will be able to make the best use of the software. The options that are available for customization are grouped together into the following sections:

- ***General Settings***
- ***Charts***
- ***Automation***
- ***File and Folder Settings***
- ***Exports and Reports***
- ***Date and Time***
- ***Communication Ports***
- ***User Server***

All of the options available will change the software in real time. For example, if the language selection and/or the date format are changed, all windows that are open will be updated without the need to restart the software.

All these options, excluding the User Server settings, are stored on a per user basis. Therefore, if more than one user operates on a single workstation the software will allow different customization settings for each.

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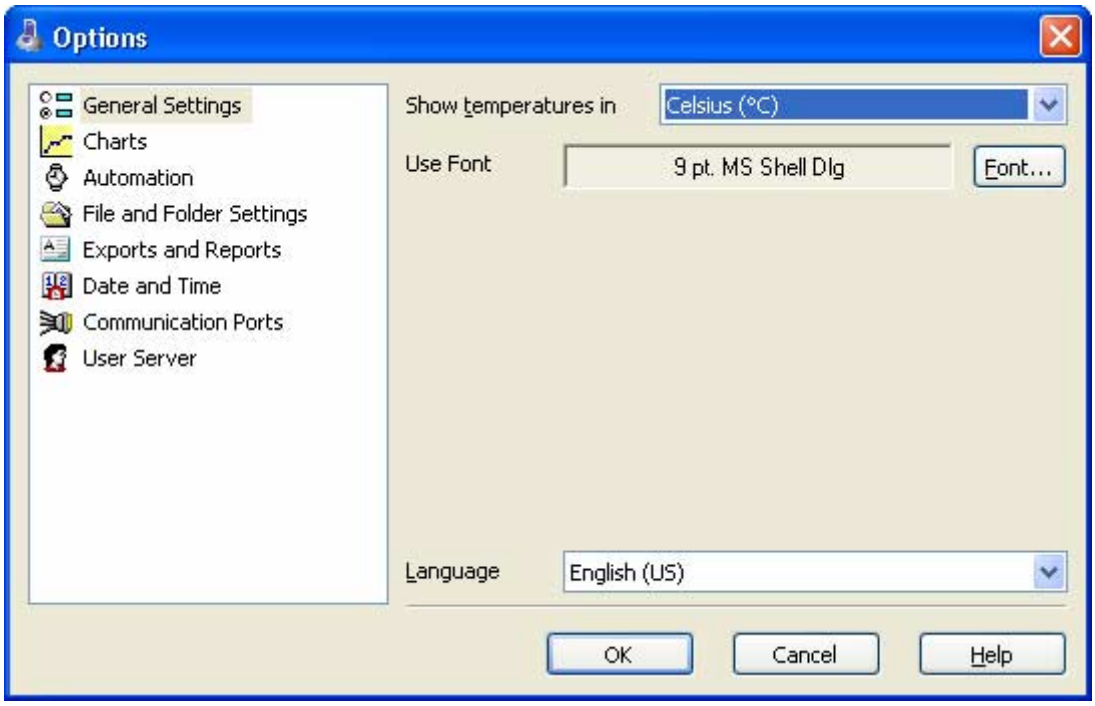
General Settings

The General Settings options allow you to change various preferences that will effect the overall appearance of the information shown by the software.



Show temperatures in

This will determine what units of measurement temperatures will be displayed in. The options include:

- Fahrenheit (°F)
- Celsius (°C)
- Kelvin (K)

Use Font

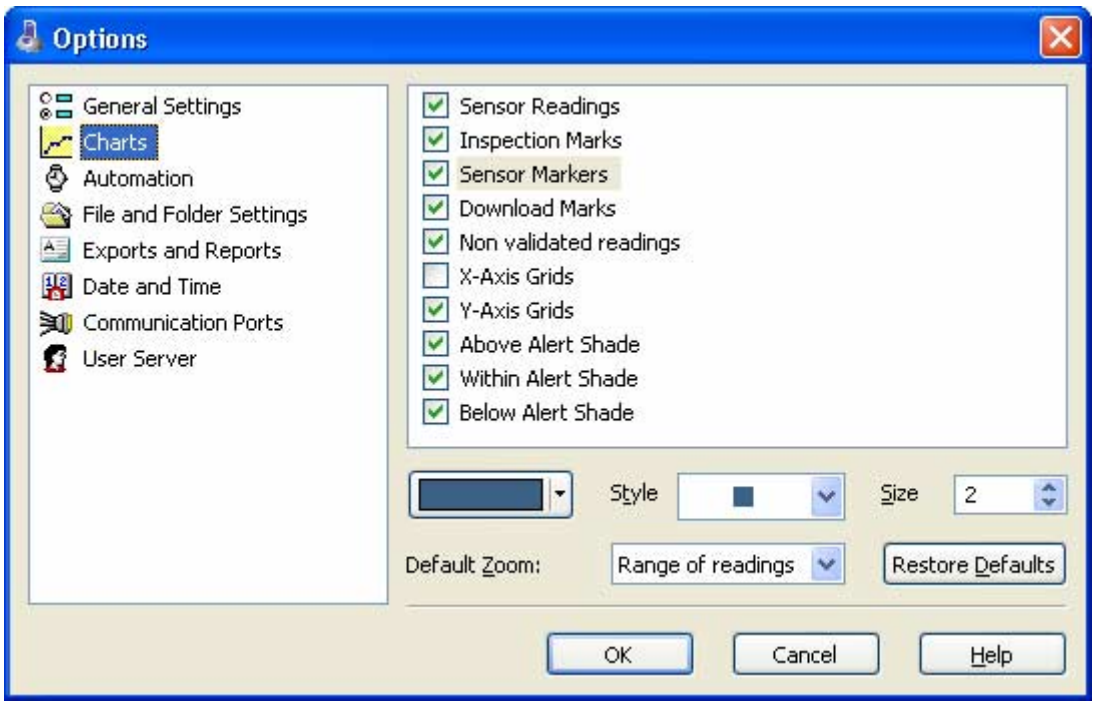
Determines what font to use to display and print information about LogTag recordings and is changed through the Font... button. A sample of the font selected will be shown to you on the screen.

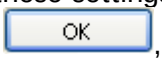
Language

This instructs the software which language for the software to use for all the information it displays and prints.

Charts

The Charts options allow the various aspects of the charts that display the readings recorded by LogTags to be customized. At the base of the Window is a color selector and other relevant controls, which apply to the highlighted item on the list in the window.



Some experimentation with these settings will show very quickly how they work. Select a color in the color panel, click 

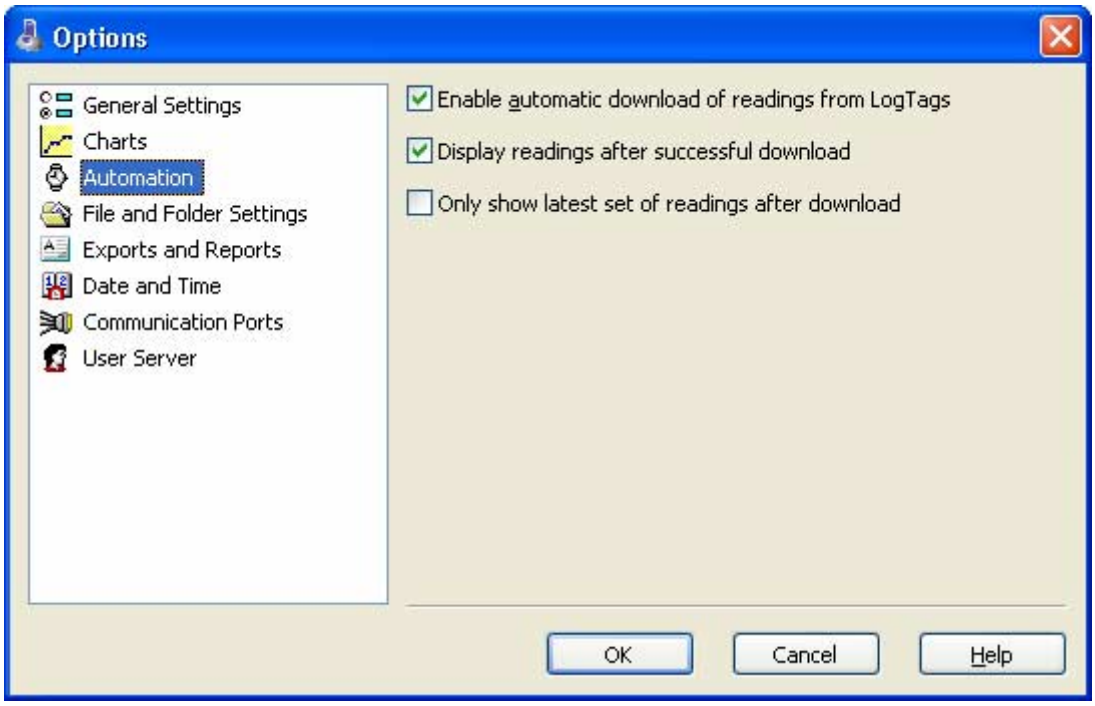
, and then go to the Data screen to see the results of the change.

Note that the three regions on the chart display can be controlled. LogTags can be configured to detect over and under conditions based on a series of temperature measurements. When the data is displayed graphically on the chart, these become color background regions. These are different colors for "above high alert limit", "between high alert limit and low alert limit" and "below low alert limit". This allows out-of-range and in-range data to be spotted easily on the listed or charted data.

Most of these settings can also be enabled or disabled by clicking the tick box for the relevant item in the list.

Automation

The Automation options determine what the software does automatically when it detects a LogTag in the Interface Cradle.



Enable automatic download of readings from LogTags

Instructs the software to automatically retrieve recordings from a LogTag when it is placed in an Interface Cradle that is connected to the computer. While the software is automatically retrieving recordings from a LogTag an animated picture will appear on the screen to let the user know this action is being performed. With this function enabled, it is not necessary to go through the download wizard procedure. This function is very useful when working with multiple LogTags.

Display readings after successful download

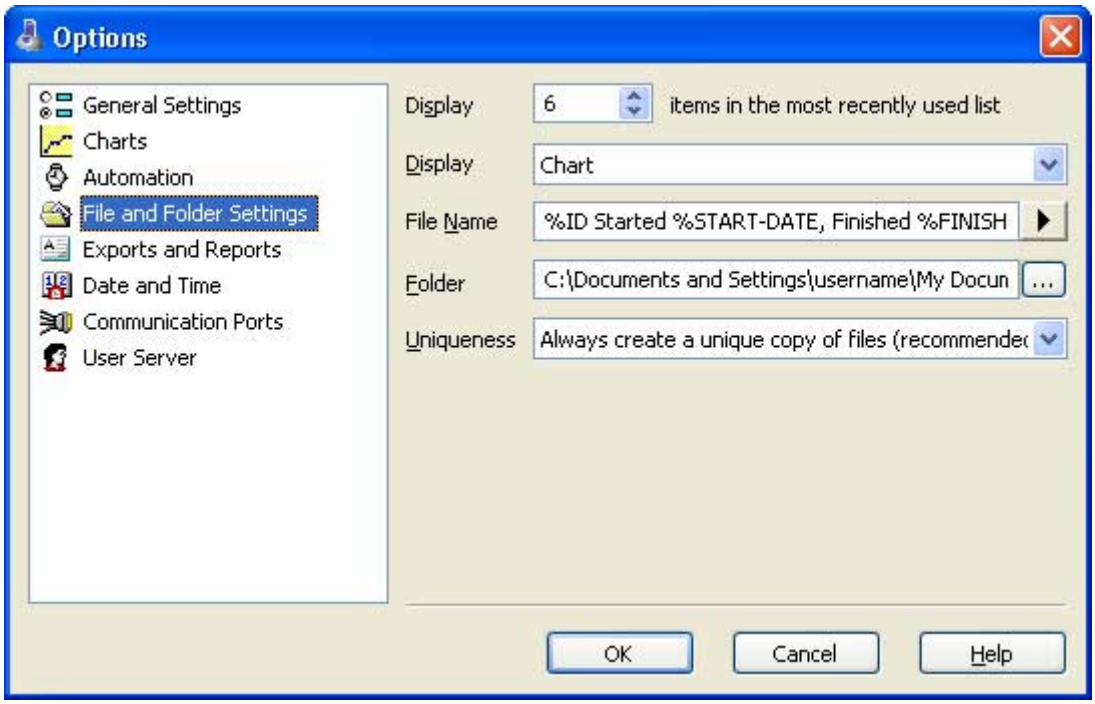
Instructs the software to display the recordings after downloading them from the LogTag. The default display format is determined by the "Display" setting in the "***File Settings***" option. This option will affect readings downloaded through the automatic download feature and when downloading through the Wizard approach.

Only show the latest set of readings after download

Instructs the software to only display the most recently retrieved set of readings on the screen. If there are multiple windows of readings open and being displayed, all of these windows will therefore be automatically closed and only the most recently retrieved set of readings will be displayed.

File and Folder Settings

The File and Folder Settings options help you manage the LogTag data files.



Display X items in my most recently used list

This determines how many of the most recently accessed files are listed in the "***File***" menu for quick access to be opened and viewed again. Once this number of files has been reached, the reference to the oldest file opened will be removed and the most recently opened file will be added to position 1. Only the file reference is removed from this list, the actual file is not deleted.

Display

This determines how the information retrieved from a file and/or LogTag will be first displayed. All other ways of displaying information will still be available regardless of which is selected here. The options include:

1 Chart, which will display the data in a time-temperature chart.

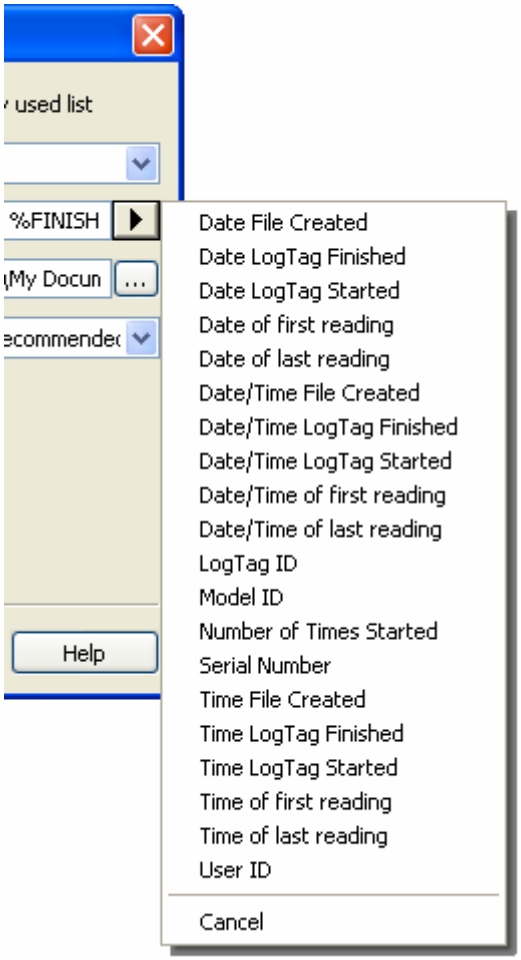
2 Data, which will display a listing (spreadsheet style) of the time-temperature data.

3 Summary, which will display a summary of the data, including averages, ranges, alert results, LogTag identification data, and other information.

File Name

Whenever information is retrieved from a LogTag it is always automatically saved to disk. This entry determines the method to be used to create a meaningful name of the file that will contain the data downloaded from the LogTag.

The button at the end of the edit control ( ) can be used to assist you with defining how file names are to be created by inserting the appropriate predefined element that matches the information you want to use. Clicking on this button will display a popup list, similar to the following picture to allow you select from the available elements.



To customize how the file name is created, you may use one or more of the available elements in any order. If you use spaces to separate the elements, these spaces will appear in the same location in the name of the file created. The letters must be in uppercase or lowercase as shown in the following table (for example, "%ID" not "%id") and all elements must be preceded by % if specified. Other characters that are included will appear in the same location and unchanged in the file name creation.

Element	Meaning
%DATE	The date when the LogTag information was originally retrieved.
%DATE-TIME	The date and time when the LogTag information was originally retrieved.
%FINISH	The date and time of the last reading recorded after being started. If the LogTag was not started then this information will be blank.
%FINISH-DATE	The date of the last reading recorded after being started. If the LogTag was not started then this information will be blank.
%FINISH-TIME	The time of the last reading recorded after being started. If the LogTag was not started then this information will be blank.
%FIRST	The date and time of when the LogTag began recording information, even if it was under pre-start conditions.
%FIRST-DATE	The date of when the LogTag began recording information, even if it was under pre-start conditions.
%FIRST-TIME	The time of when the LogTag began recording information, even if it was under pre-start conditions.
%ID	The unique LogTag identification value.
%LAST	The date and time of the last reading recorded, even if there are only pre-start recordings.
%LAST-DATE	The date of the last reading recorded, even if there are only pre-start recordings.
%LAST-TIME	The time of the last reading recorded, even if there are only pre-start recordings.
%PRODUCTID	The product identifier (part number) for the LogTag used to record the data.
%SERIALNUM	The unique serial number of the LogTag.
%START	The date and time the LogTag was started to record information. If the LogTag was not actually started and only pre-start information was recorded then this information will be blank.
%START-COUNT	The number of times the LogTag has been started since manufacture.
%START-DATE	The date the LogTag was started to record information. If the LogTag was not actually started and only pre-start information was recorded then this information will be blank.
%START-TIME	The time the LogTag was started to record information. If the LogTag was not actually started and only pre-start information was recorded then this information will be blank.
%TIME	The time when the LogTag information was originally retrieved.

%USERID	The user defined identifier for the set of information recorded by the LogTag.

You may use the \ character to specify that a file name definition includes a sub folder name as well as the actual file name, which is useful if you want to group/sort files automatically together, for example, by date or by User Id.

Each of the following elements within the quotes (") are not permitted, as they are not supported the operating system ": * ? < > |". If you do include one of these elements in the definition of how the file names are to be created they will be replaced with the _ character.

If you use a date and/or a time element, the format of that element will be determined by the settings defined in the "***Date and Time***" set of options.

Folder

This determines the location where the files are automatically stored. The location defined here can specify a local drive path or a network drive path. UNC folder names are supported. The (...) button at the end of the edit control will assist you to locate the default store folder by browsing the folder structure available to you, if you choose to use it.

Since this is the default location where files are stored, this also represents the default folder that will be used when searching for files to open (through the Open command in the File menu).

Uniqueness

This determines how the software will manage information retrieved from a LogTag when a file of the same name already exists. For example, when you retrieve the information from the same LogTag once every day, while the LogTag is still recording and the LogTag has not been prepared for its next use and started again. The options available include:

1 Always create a unique copy of files (recommended)

If a file of the same name already exists, then the software will automatically append " Copy *n*" to the end of the file name, where "*n*" will be a unique number.

2 Overwrite file if the file already exists

If a file of the same name already exists, the existing file is overwritten (deleted and replaced) with a file that contains the information just retrieved from a LogTag.

3 Prompt if an existing file already exists.

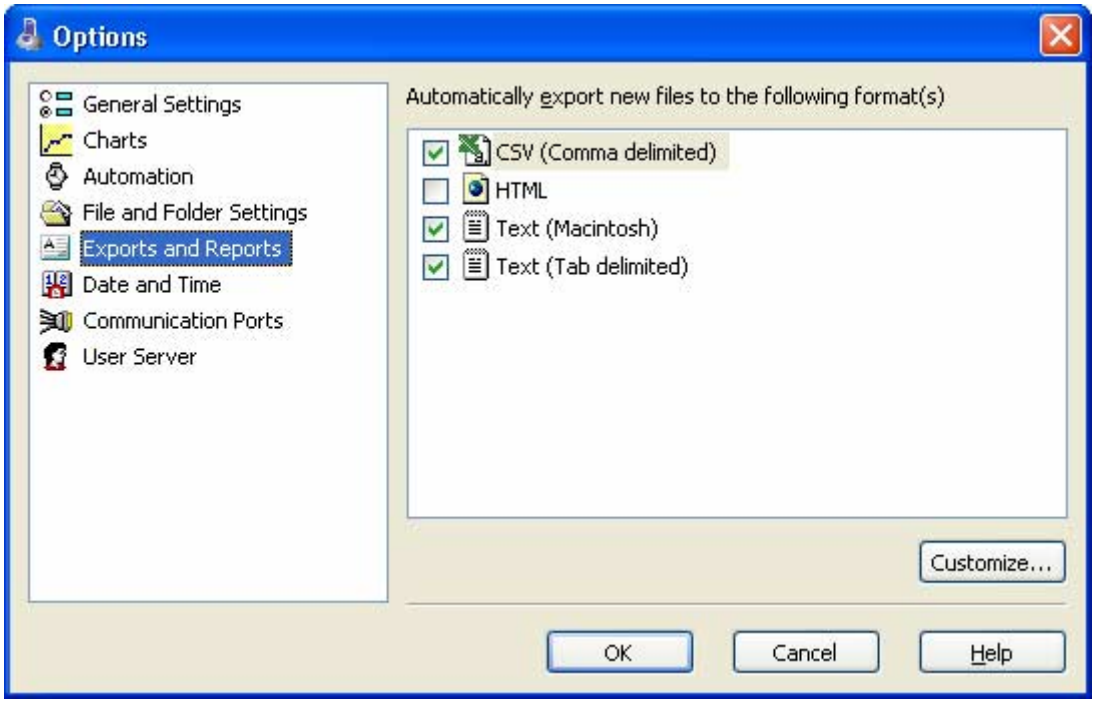
If a file of the same name already exists, then you will see a message appear asking you whether or not you want to overwrite and replace the existing file with the information just retrieved from the LogTag.

If you answer "Yes" then the action described in the option "Overwrite file if the file already exists", previously explained, will be performed.

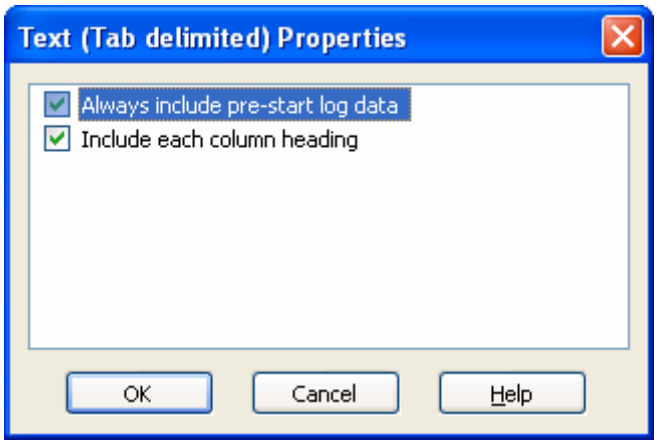
If you answer "No" then the action described in the option "Always create a unique copy of files (recommended)", previously explained, will be performed.

Exports and Reports

Every time recorded data is retrieved from a LogTag it is automatically saved to disk in the software's native format so that it can be opened and viewed at a later date. However, it may be that the recorded data is to be regularly integrated with other data and/or view the recorded data using software other than LogTag Analyzer. Exports and Reports will instruct the software to automatically create one or more files in a format that is compatible with the other software being used, whenever recorded data is retrieved from a LogTag.



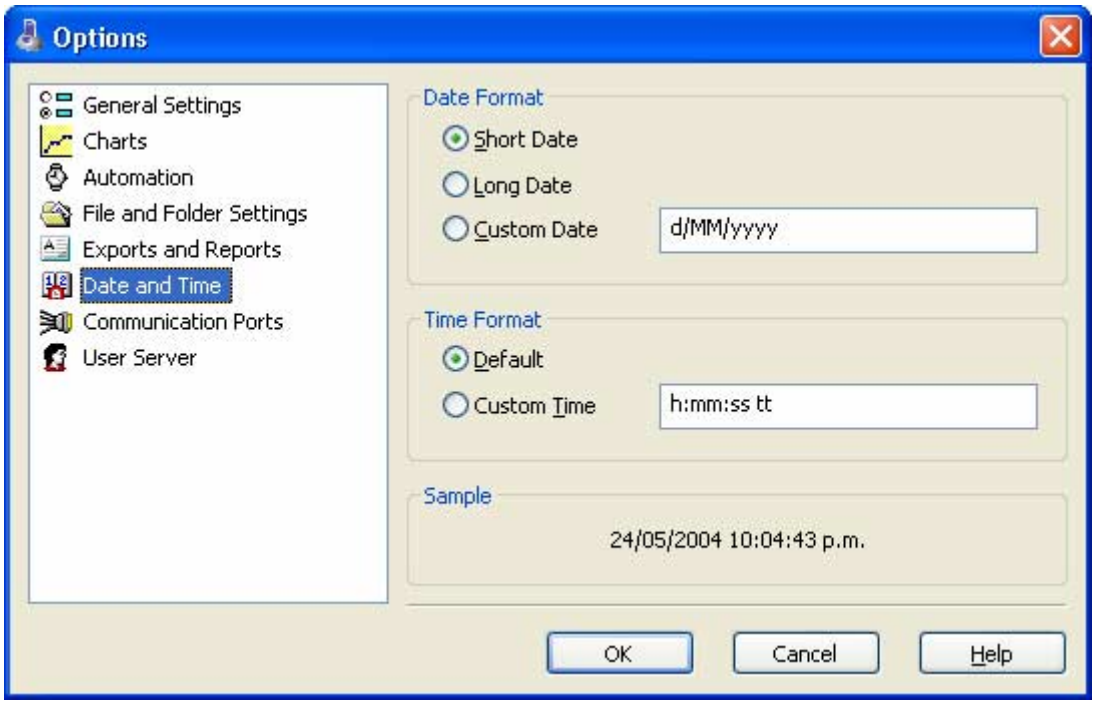
To instruct the software to create a copy of the file in a format other than the native format used by LogTag Analyzer, simply tick the file format from the list available. To override and customize the contents of the particular file format, simply ensure the file format is highlighted and click Customize... . Once Customize... has been clicked, a window will be displayed that will show the available options that can be overridden.



All the additional files created will be automatically saved at the appropriate time using the filename and folder location defined in the "***File and folder settings***" options. Since these file formats are not the native LogTag Analyzer file format, the LogTag Analyzer software will no longer be able to detect whether or not the data within it is genuine and original and will not be able to display the information within the file.

Dates and Times

The Date and Time options allow how the date and time information is displayed by the software to be overridden. It does not affect how the date and time information is stored and therefore, how the date and/or time information is shown can be changed at any time. At the bottom of this option window, a sample of the date and time using the formats selected will be displayed.



To customize how the date information is displayed, the following elements may be used. If spaces are used to separate the elements, these spaces will appear in the same location in the date displayed. The letters must be in uppercase or lowercase as shown in the following table (for example, "MM" not "mm"). Characters that are enclosed in single quotation marks will appear in the same location and unchanged in the date displayed.

Element	Meaning
d	Day of month as digits with no leading zero for single-digit days.
dd	Day of month as digits with leading zero for single-digit days.
ddd	Day of week as a three-letter abbreviation.
dddd	Day of week as its full name.
M	Month as digits with no leading zero for single-digit months.
MM	Month as digits with leading zero for single-digit months.
MMM	Month as a three-letter abbreviation.
MMMM	Month as its full name.

y	Year as last two digits, but with no leading zero for years less than 10.
yy	Year as last two digits, but with leading zero for years less than 10.
yyyy	Year represented by full four digits.

To customize how the time information is displayed, the following elements may be used. If spaces are used to separate the elements, these spaces will appear in the same location in the time displayed. The letters must be in uppercase or lowercase as shown in the following table (for example, "ss", not "SS"). Characters that are enclosed in single quotation marks will appear in the same location and unchanged in the time displayed.

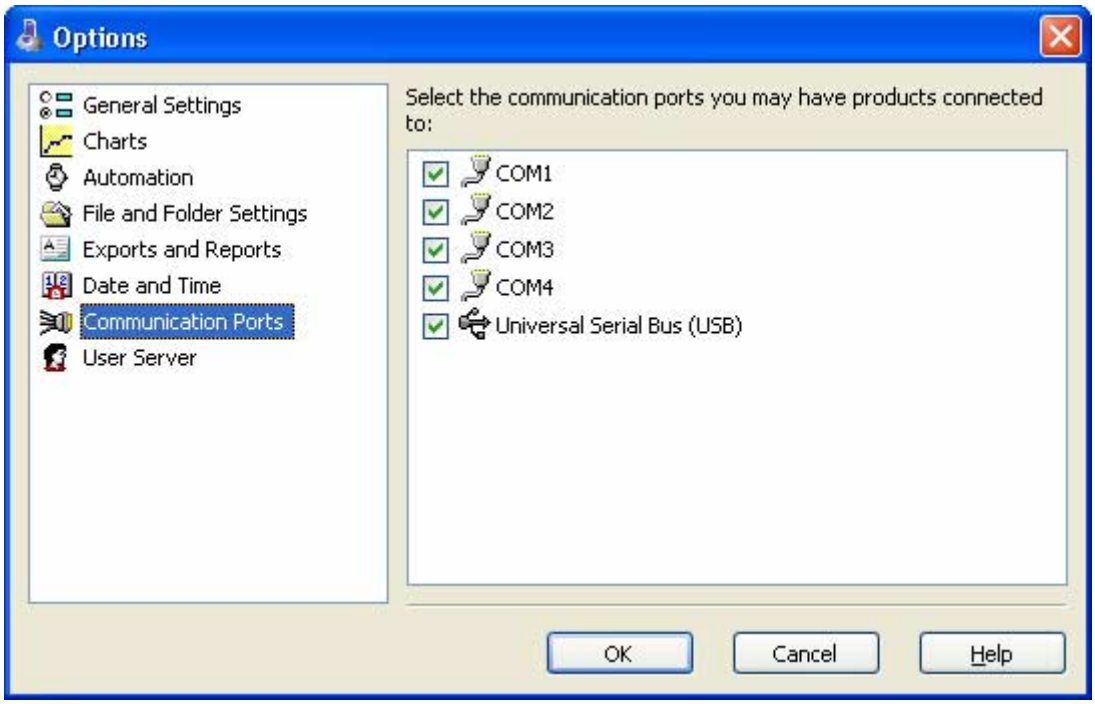
Element	**Meaning**
h	Hours with no leading zero for single-digit hours; 12-hour clock.
hh	Hours with leading zero for single-digit hours; 12-hour clock.
H	Hours with no leading zero for single-digit hours; 24-hour clock.
HH	Hours with leading zero for single-digit hours; 24-hour clock.
m	Minutes with no leading zero for single-digit minutes.
mm	Minutes with leading zero for single-digit minutes.
s	Seconds with no leading zero for single-digit seconds.
ss	Seconds with leading zero for single-digit seconds.
t	One character time-marker string, such as A or P.
tt	Multi character time-marker string, such as AM or PM.

For example, if the date was 2 January 2004 and the date format was defined as "yy-M',' dd" (excluding the double quotes) the date would be displayed as "04-1, 02".

Communication Ports

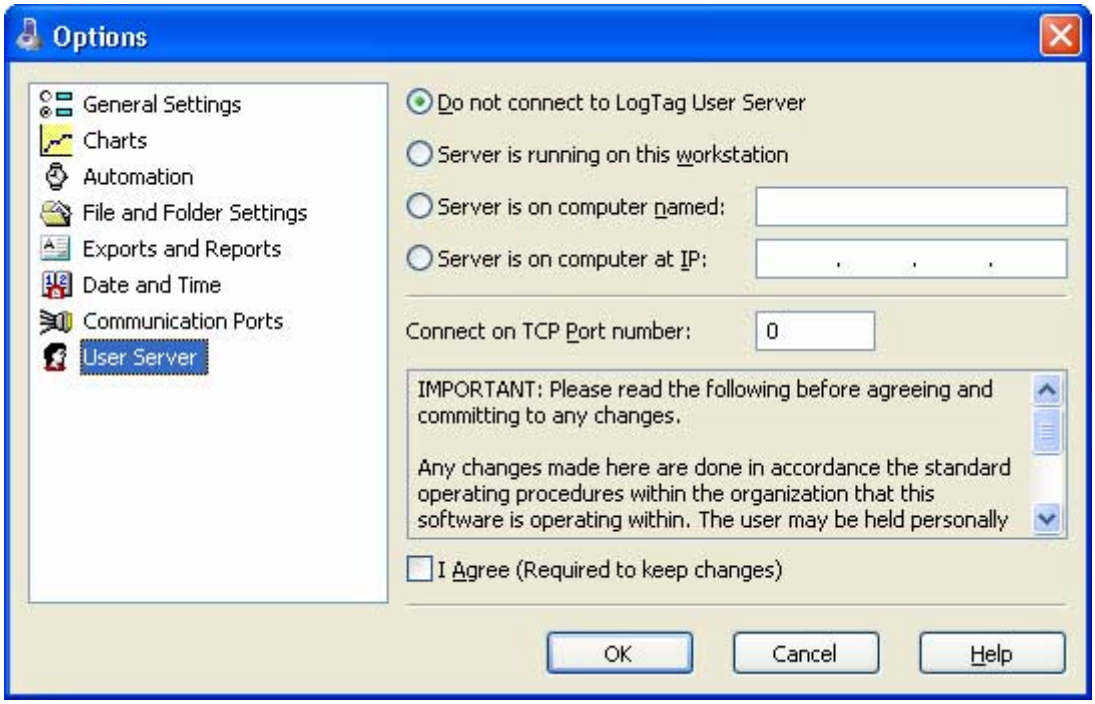
The Communication Ports options control which communication ports are checked for connected Interface Cradles. This allows certain communication ports to be excluded, which are not used to connect Interface Cradles to and/or are regularly used for other applications, thereby reducing the possibility that this software will interfere with the operation of other applications running on the current system.

The software checks each communication port at the same time, rather than one after the other, therefore having the software check multiple communication ports will not adversely affect the performance of the software significantly. As the software supports multiple communication ports, it is possible to connect and use to more than one Interface Cradle at the same time.



User Server

The User Server options define if and where the software should connect to the LogTag User Server software. If you do not have LogTag User Server software installed on your computer and/or available on your local area network, you will not need to make any changes to this set of options. Connection to the LogTag User Server software is typically only used within a multiple computer user environment and/or if your organization requires compliance with the US FDA 21 CFR Part 11 regulations, for use of digital signatures that are controlled by a central administrator.



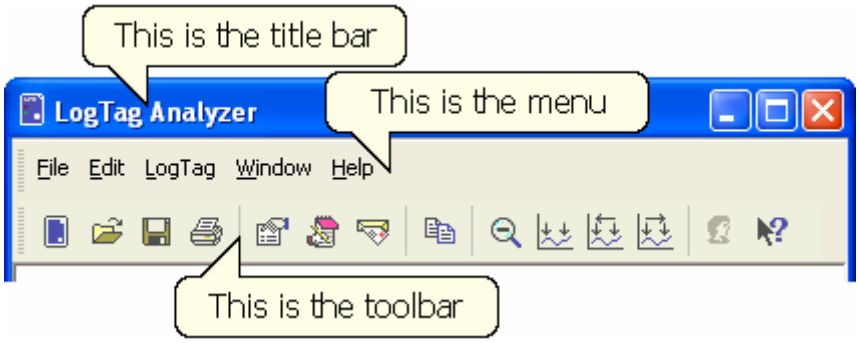
You will need to consult your network administrator and/or documentation pertaining to the LogTag User Server software to determine what settings should be used in this set of options. You will not be able to change these settings if the software is unable to establish a valid connection with the LogTag User Server software.

Once a valid connection to the LogTag User Server software has been established, you will be required to "***log on***" to the software to continue using it.

CHAPTER 7

Menus and Toolbars

At the top of the screen for the LogTag Analyzer, just below the title bar, which contains the name of the software, is the menu system and toolbar for the software. The toolbar provides quick access to some of the more commonly used functions within the menu system. The menu system contains lists of all the operations and commands that are available to you while using the software.



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Menu commands

The menu system has been separated into groups of related commands. Each of these menu groups is explained in more depth in the subsequent sections. The software will only display the menu groups and commands within each menu group that are appropriate depending on what you are currently doing with the software.

You may also see that some of the menu commands have a reference after the command name, for example F2 or Ctrl+O. These represent key strokes on the keyboard that instruct the software to perform the appropriate command, without out the need to select the menu or toolbar command. When only one key reference is mentioned, for example "F2", then pressing that single key on the keyboard will cause the appropriate command to be performed. If there is more than one key reference mentioned, for example Ctrl+O, then to cause the command to be performed you must press and hold down the first key mentioned while pressing the other key once. When letters are used in the key reference, for example Ctrl+O, it does not matter whether or not the caps lock is on or off.

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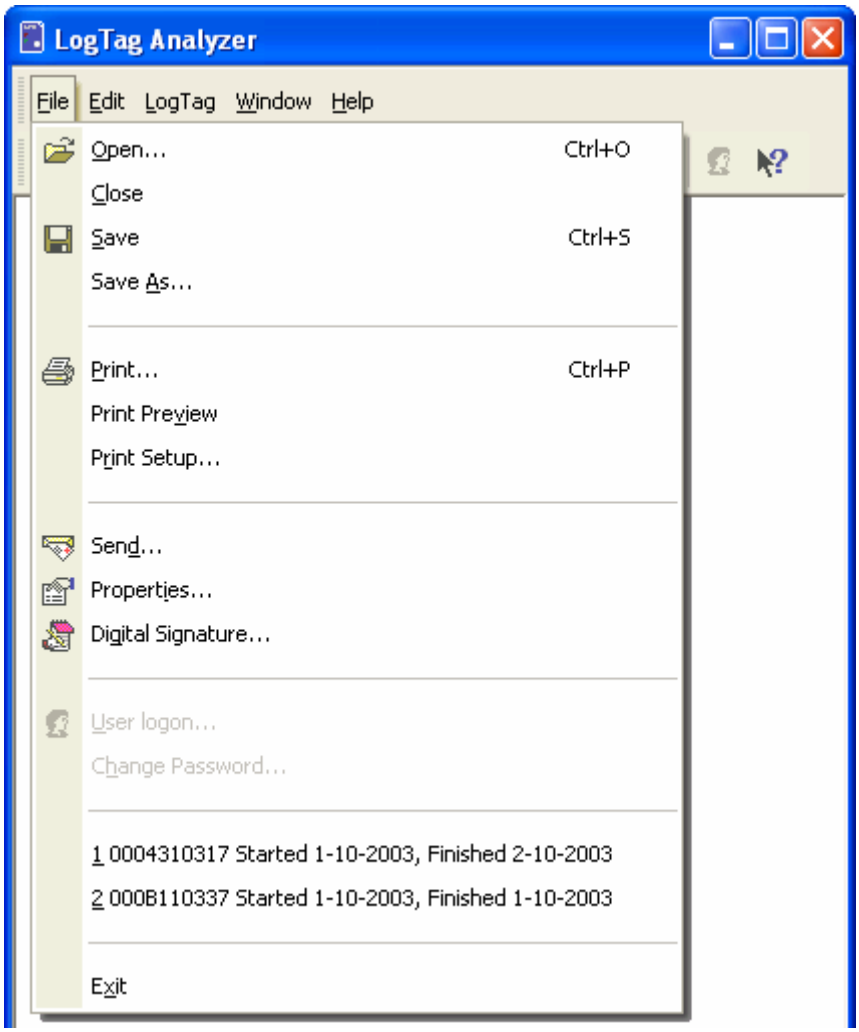
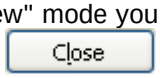
File Menu

The "File" menu contains commands that generally relate to a LogTag file as a whole. A LogTag file contains a variety of information that relates to a data set representing readings that were recorded over a discrete period of time by a single LogTag. The File menu will appear similar to the following picture.



The following table outlines the commands and the explanation of each command that may appear in the "File" menu when using the LogTag Analyzer software:

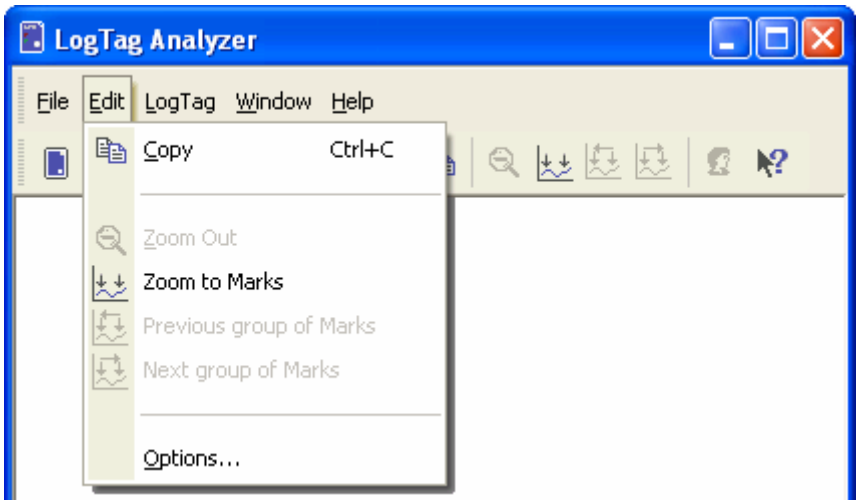
Command	Explanation
Open... ( )	This will display the Open file dialog, which will allow you to open a LogTag file that contains readings previously retrieved. It will start at the folder defined in the ***File and Folder Settings*** section in the ***Options***.
Close	This command will close all windows that are displaying information about the open file that is currently selected. If no files are currently open this command will not be visible.

Save ( )	This will save any changes you have made to the LogTag file to your disk drive.
Save As...	This will display the Save As file dialog, which will allow you to save a copy of the file currently being displayed in the same or different folder with the same or different file name.
Print... ( )	This will open a window allowing you to print a copy of the LogTag file to an output device, which will typically be a printer. This command is further explained in the section "***Printing the results***".
Print Preview	This will change the display mode of the software to show you a copy of how a printout of the currently selected file and window would look like. In "Print Preview" mode you will not be able to zoom in or out of a chart. Click  to exit the "Print Preview" mode and return to normal display mode.
Print Setup...	This will open a window allowing you to view and/or adjust one or more of your printer's settings.
Send... ( )	This will help you send, by email, the currently open and selected LogTag file to another user without the need to exit to your email software or to deal with file attachments. This command is explained in further detail in the section "***Sending a file by email direct from Analyzer***".
Properties... ( )	This will open a window that will display the information about the file that is being displayed and currently selected. This same window and information will be displayed if you view the properties of the file from Microsoft Windows Explorer.
Digital Signature... ( )	This will open a window to display a list of digital signatures that have been included with the file. It also allows you to add and print this list of digital signatures. This command is explained in further detail in the section "***Digital signatures***".
User logon... ( )	This allows a user to logon to and use the Analyzer software. When the software is connected to the User Server software, users must logon to the software prior to being permitted to use the software. Therefore, this command will only be available if the Analyzer software is connected to the User Server software. If a user is already logged on to the software, then this command is not visible. The section "***User Server***" explains in more detail how to get the Analyzer software to connect to the User Server software.
Logoff user (*username****)*** ( )	This allows the currently logged on user to logoff the Analyzer software. The *username* portion of this command will represent the name of the user currently logged on. If there is no currently logged on user, this command is not visible.
Change Password...	This allows the currently logged on user to modify their password that they use to logon to the Analyzer software. This command will only be available if the Analyzer software is connected to the User Server software and the User Server administrator has granted the appropriate user permissions.

1, 2, 3, etc	This portion of the menu represents a list of the most recently files you have viewed. To reopen one of these files, simply click on the entry (name of the file) to open. If a file that you want to view is not included in this list, you may use the "Open..." command included in this menu. The number of files included in this list can be adjusted through the "***General Settings***" section of the ***Options***.
Exit	This command will exit and close down the LogTag Analyzer software. Any files that you currently have open will also be closed automatically for you. If a user is currently logged on to the Analyzer software when the Analyzer closes, the user will be automatically logged off.

Edit Menu

The "Edit" menu contains commands that generally relate to the contents of a LogTag file and will appear similar to the following picture.



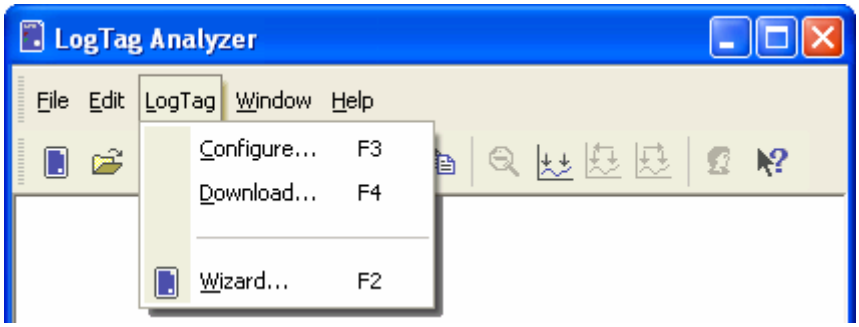
The following table outlines the commands and the explanation of each command that may appear in the "Edit" menu when using the LogTag Analyzer software:

Command	**Explanation**
Copy ( )	Places a copy of the contents of the currently displayed window onto the clipboard, which can then be pasted into any Windows® application. If you are copying a chart, the chart at its current zoom range is copied to the clipboard. If you are copying from one of the tabular style windows (Data or Summary), then the entire contents of the window is copied to the clipboard, regardless of what part of the data you have scrolled to view.

Zoom Out ( )	This will undo the last zoom operation performed allowing you to see more of the data on the chart. If the chart is displaying all the readings recorded by the LogTag, this command will not be available.
Zoom to Marks ( )	When this command is enabled, the chart is automatically zoomed to show readings recorded between inspection marks. The section "***Starting and using the LogTag***" explains in further detail how inspection marks are recorded.
Previous group of Marks ( )	This command will show the readings recorded between the first inspection mark shown and the previous inspection mark recorded. This command will only be available if the "Zoom to Marks" command is enabled and the first reading recorded is not currently visible.
Next group of Marks ( )	This command will show the readings recorded between the last inspection mark shown and the next inspection mark recorded. This command will only be available if the "Zoom to Marks" command is enabled and the last reading recorded is not currently visible.
Options... ( )	This will open a window allowing you to customize the software. This command is further explained in the chapter "***Customizing the software***".

LogTag Menu

The "LogTag" menu contains commands that generally relate to the usage and interaction with LogTags.



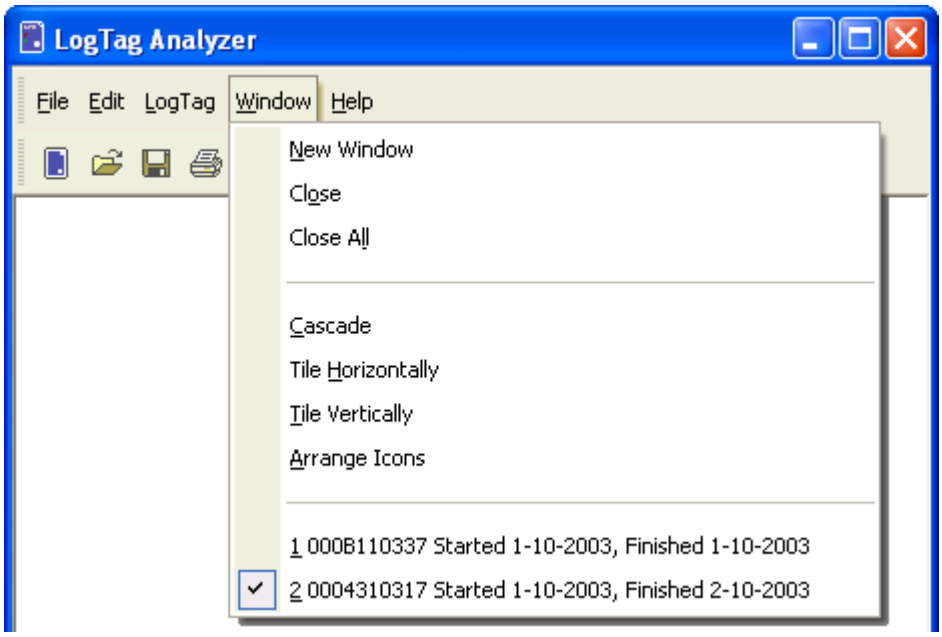
The following table outlines the commands and the explanation of each command that may appear in the "LogTag" menu when using the LogTag Analyzer software:

Command	Explanation
Configure...	This will display a wizard to help you through the necessary steps to prepare LogTags for their next use. This command is explained in further detail in the chapter "***Preparing LogTags for use***".

Download...	This will display a wizard to help you through the necessary steps to retrieve a copy of the recorded readings stored within the LogTag(s). This command is explained in further detail in the chapter "***Results from LogTag***".
Wizard... ( )	This will display a wizard to help you through the necessary steps to retrieve a copy of the recorded readings stored within the LogTag(s) and then prepare the LogTags for their next use. This command is explained in further detail in the chapter "***Quick Start Guide***".

Window Menu

The "Window" menu contains commands that relate to the management of each Window open within the LogTag Analyzer software that displays the contents of a LogTag file.



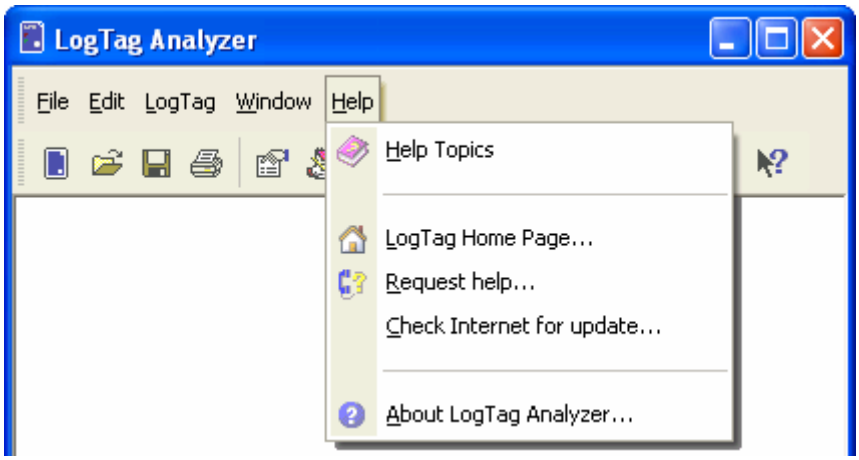
The following table outlines the commands and the explanation of each command that may appear in the "Window" menu when using the LogTag Analyzer software:

Command	Explanation
New Window	Opens a new window that contains a copy of the information of the currently selected window. This command is useful when you need to closely inspect and analyze different sections of the same data set.
Close	Closes the currently selected window within the LogTag Analyzer software.
Close All	Closes all the windows within the LogTag Analyzer software.

Cascade	Arrange all the windows within the LogTag Analyzer software in an overlapping style.
Title Horizontally	Arrange all the windows within the LogTag Analyzer software as horizontal non-overlapping tiles.
Title Vertically	Arrange all the windows within the LogTag Analyzer software as vertical non-overlapping tiles.
Arrange Icons	Arrange all the minimized windows within the LogTag Analyzer software at the bottom of the main window.
1, 2, 3, etc	The tick mark beside these entries indicates the window that is currently selected. If you want to change the currently selected window to one of the windows listed, just click/select the appropriate entry on this list.

Help Menu

The "Help" menu contains commands that relate to providing you with help and assistance with using the LogTag Analyzer software.



The following table outlines the commands and the explanation of each command that may appear in the "Help" menu when using the LogTag Analyzer software:

Command	**Explanation**
Help Topics ( )	Opens a window that contains the online help.
User Guide ( )	Opens the online user guide for viewing. Requires Adobe Acrobat and/or Adobe Acrobat Reader software, version 4 or later, to be installed on the computer.
LogTag Home Page... ( )	This will open your default Internet browser software and display the LogTag Recorders Internet site, www.logtagrecorders.com. This command requires that your computer be currently connected to the Internet to successfully display the LogTag Recorders Internet site.

Request help... ( )	This will gather non personal information from your system to include in the email to be sent to software support at LogTag Recorders, so that the support team will be informed of the relevant information about your system in order to provide you with quality and useful assistance. This command is explained in further detail in the chapter "***Getting more help***".
Check Internet for update...	This is a simple way of checking to see if there is a newer version of this software available for download. This command is explained in further detail in the chapter "***Getting updated software***".
About LogTag Analyzer... ( )	Display the version information about the LogTag Analyzer software that you are using.

Toolbar commands

Each picture on the toolbar represents a unique command. The pictures that are included on the toolbar represent the following commands:

This will bring up the LogTag Wizard, which will take you through the steps to retrieve readings from connected LogTag(s) and prepare them for their next use.

This will display the file open window to allow you to locate and open LogTag files that contain previously retrieved LogTag readings.

Save a copy of the LogTag data to a file on your disk drive.

Open the window that will allow you to print a copy of the LogTag data to a printer.

Displays file properties about the currently selected open file.

Displays information about any digital signatures included in the currently selected open file, which is also allows where new digital signatures can be added to the file and where you can print a copy of the digital signatures.

Creates a new blank email for sending a copy of the currently selected open file as an attachment to a recipient of your choice.

Places a copy of the currently displayed information to the Windows clipboard so that you can paste it into another Windows software package.

Zooms out one level of the actively displayed chart. If you are displaying a chart and this function is not available, then all data that is available to be displayed is currently been displayed and therefore there is no more additional information that can be displayed by zooming out.

This zooms the chart to show information between the oldest reading recorded and the first inspection mark that exists amongst the data. If this function is not available then there is no inspection marks in the data currently been displayed. The next two commands will not be available until this command is activated.

This zooms the chart to show the group of data that was recorded between the previous inspection mark and the first inspection mark currently been displayed. This function is disabled when either the oldest reading is already been displayed or the chart has not been zoomed into showing groups of readings between inspection marks.

This zooms the chart to show the group of data that was recorded between the next inspection mark and the last inspection mark currently been displayed. This function is disabled when either the newest reading is already been displayed or the chart has not been zoomed into showing groups of readings between inspection marks.

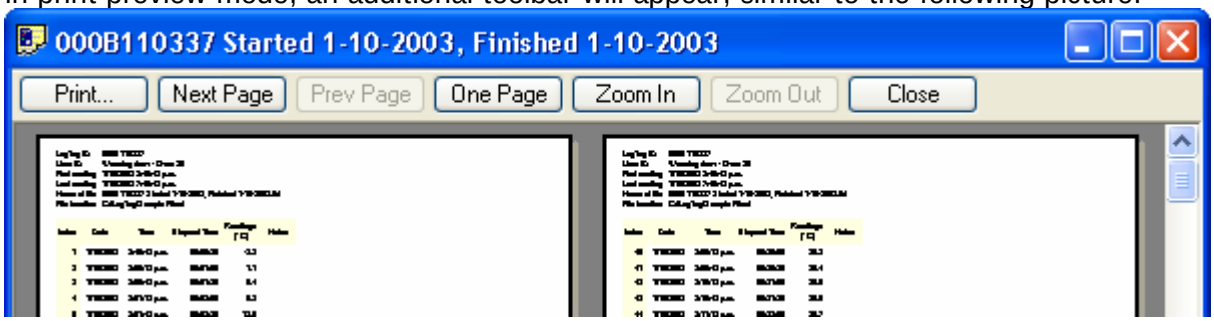
This will open a window allowing you to customize the software. This command is further explained in the chapter "***Customizing the software***".

This will log a user on to the software if no user is currently logged on or log off the currently logged on user. This command will only be available if the software is connected to the LogTag User Server software.

This will allow you to show the help topic on any particular command or topic that you subsequently select.

Print preview toolbar

The print preview feature, available through the ***File menu***, of the software will display copy of the data as it would be included on a print out. When the software is displaying a file in print preview mode, an additional toolbar will appear, similar to the following picture.



Command	Explanation
Print...	This will open a window allowing you to print a copy of the LogTag file to an output device, which will typically be a printer. This command is further explained in the section "***Printing the results***".
Next Page	This will display the next page included in the print out. This button will be disabled if there are no more pages available to be displayed.
Prev Page	This will display the previous page included in the print out. This button will be disabled if there are no previous pages available to be displayed.
One Page	Selecting this button will change the display so that only one page is displayed at a time. Once this button is selected it will change to "Two Page".

Two Page	Selecting this button will change the display so that two consecutive pages are displayed side by side at the same time. This button will be disabled if there is only one page in the print out, like a chart. Once this button is selected it will change to "One Page".
Zoom In	This will zoom in the display of the print out making it appear larger on the screen. It will not effect what information is included in the print out.
Zoom Out	This will zoom out the display of the print out making it appear smaller on the screen. It will not effect what information is included in the print out.
Close	This will close the print preview mode of display and revert the display of the data back to normal mode, which will allow users to switch between chart display and data listing display, for example.

CHAPTER 8

Working with Networks

When using and deploying software in a network environment, network administrators often require additional technical information about the software so they can integrate support for it correctly and seamlessly. This chapter briefly covers some points of interest for computer network administrators.

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Distributing software to workstations

When using the software on many computers within a computer network, it is not always efficient to visit and install the software and subsequent updates manually on each computer workstation. The installation of the software does support zero administration installation, whereby the installation package can be located on a central point, usually a server, and have it install on each relevant workstation, without requiring user intervention.

To distribute the software without user intervention is a two step process.

1 Create an installation script file that will provide the answers and actions to be performed on each step of the installation process. To create an installation script, use the following command line syntax, including the quotes as used:

\\myserver\my_apps_path\setup.exe /a /r /f1"\\myserver\my_apps_path\setup.iss"

2 Ensure that whenever a user installs the software the installation script is used. To install the software using an installation script previously created use the following command line:

\\myserver\my_apps_path\setup.exe /s /a /s /f1"\\myserver\my_apps_path\setup.iss"

Where,

a "\\myserver\my_apps_path\" represents the network path to the folder containing the installation of the LogTag Analyzer software.

b "setup.exe" is the installation software.

As many different installation scripts as are suitable for your situation may be defined and used.

LogTag Analyzer software is released on the LogTag Recorders Internet site using a standard filename syntax, which is [software_name][major_version][minor_version]r[release_version].exe. For example, if the file name of the installation package was "logtag_analyzer10r24.exe" the name of the software would be "LogTag Analyzer" version 1.0 Release 24.

The installation of the LogTag Analyzer software involves copying a number of files to the destination folder, which can be chosen during the installation process, a file is installed in the Windows System folder and some plug and play drivers to support the USB Interface Cradle. Therefore, when deploying the software onto Windows NT® based operating systems, like Windows NT®, Windows 2000® and Windows XP®, the user installing the software will require local administrator privileges for the software to install correctly. It is possible, to elevate a users permissions on a Windows NT® based server network for the sole purpose of being able to install the software successfully through the use of a Group Policy Object.

When installing the software on to a Windows NT® operating system, the plug and play drivers for the USB Interface Cradle will not be installed as Windows NT® does not support USB devices.

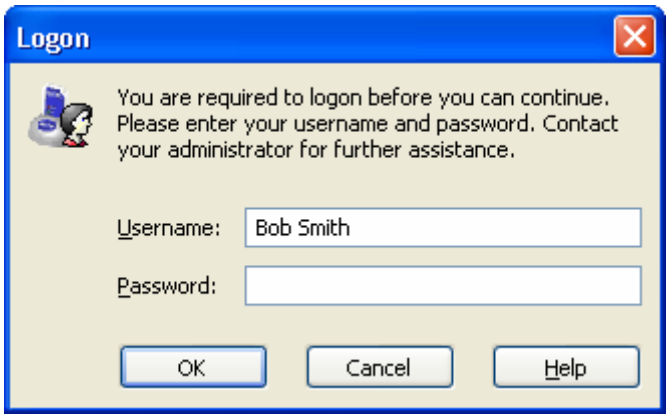
Restricting what users can do

In a multiple user environment, it is not always desirable to allow every user to perform any and all tasks with the software. For example, to ensure all documents printed from the software use the same date/time display format, it may be desirable to not allow users to customize the software to change how the software displays dates and times. To provide administrators of systems with a central point of control, LogTag Recorders has developed a software package called "LogTag User Server", which when used in conjunction with this software, it will provide an administrator with the ability to choose whether or not to restrict what users can and cannot do with this software.

To find out more about LogTag User Server, please contact your network administrator and/or your LogTag reseller.

How users log on

When the software has been ***customized*** to be connected to the ***LogTag User Server*** software, all users are required to successfully logon to the software before being permitted to use any of the features and functionality of the software. For a user to successfully logon to the software, the user must enter their username, which the administrator would have assigned, and their password. Username's are typically not case sensitive, however passwords are. That is, entering the Username "Bob Smith" is the same as entering "BOB SMITH" and "bob smith". However, entering a password of "bob" rather than "Bob", for example, is considered to be different.



Every logon attempt, whether successful or not, may be recorded automatically in the audit logs by the administrator. As a security measure, the network administrator may configure the ***LogTag User Server*** software so that a user account becomes locked and therefore temporarily inaccessible if a certain number of consecutive failed logon attempts are made to the user account. Please contact your network administrator if you have problems with the logging on the software.

How users change their password

When the software has been ***customized*** to be connected to the ***LogTag User Server*** software, the network administrator may require and/or permit users to change the password used to logon to the software. Users are only permitted to change the password for the user account that is currently logged on, which is typically their own, and as a security precaution, users will always need to supply their current logon password before being permitted to change it.

The network administrator may enforce certain rules pertaining to what is a valid password. For example, they may require a minimum number of characters (digits, letters or symbols) and/or a minimum number of digits to be included in the password. Please contact your network administrator if you have problems with the logging on the software.

Passwords should be chosen such that they would be difficult for some one else to guess. If another person was able to guess the password they would be able to logon and impersonate the user. Therefore, following are a few points to remember when changing a password:

1. Do not use something that is personal to the user. Birth dates, license plate numbers, names of family members, types of vehicles owned, favorite foods and address of residence are all examples of passwords that should NOT be used.
2. Do not write it down.
3. Change the password on a regular basis.

If a user's password is forgotten, the network administrator will be able to change it. However, network administrators will not be able to see and therefore inform users what their current password is.

CHAPTER 9

Getting more information

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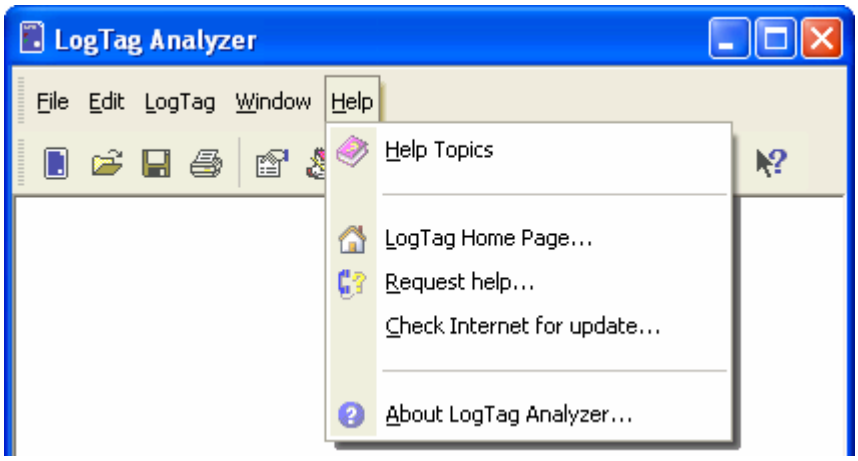
Getting updated software

There are two ways to see if a newer version of the LogTag Analyzer software is available and download a copy if a newer version exists.

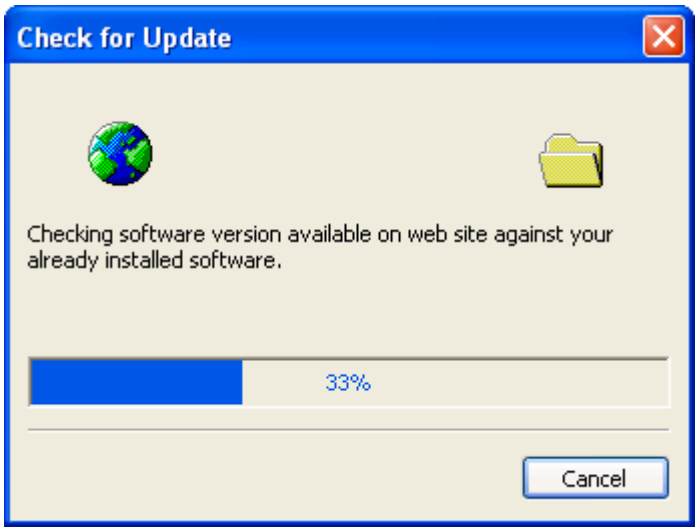
1 Within the "Help" menu item in the software is a command called "Check Internet for update..."



2 Visit the LogTag Recorders Internet Site, www.logtagrecorders.com, and follow the relevant instructions to obtain a copy of the software.

The first option will download from the LogTag Recorders Internet site the relevant information about the latest version of the software available and compare this information with the software that has already been installed. The software will then let you know whether or not a newer version of the software is available. During this entire process no information about you or your system is transmitted out from the LogTag Analyzer software and therefore you can rest assured that your privacy is maintained.

While the software is retrieving the information from the Internet about the latest available version, the software will display its progress in a window similar to the following picture.

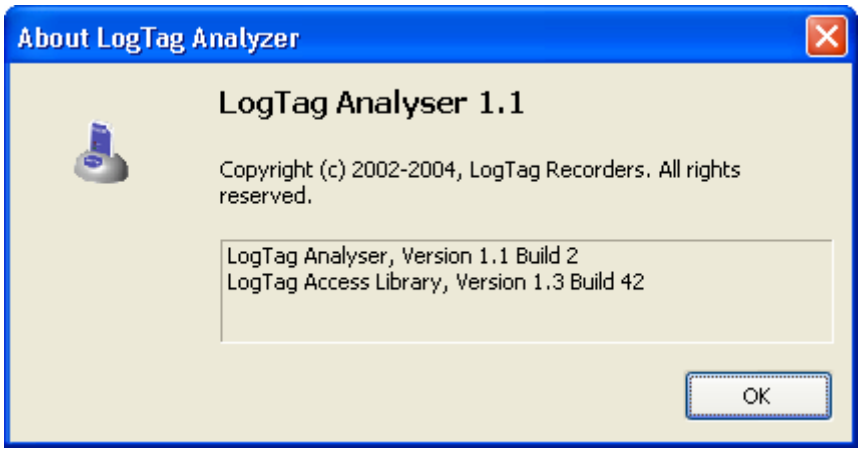


If a newer version of LogTag Analyzer is available a "Download" button will appear. Clicking "Download" will begin the download process, in which you select the location for the installation file. After the installation file has been downloaded you will need to close LogTag Analyzer and then start (open) the downloaded file to begin the installation.

Installing a newer version of the LogTag Analyzer software will update all the relevant program files. It will not affect any of your LogTag data files or your custom settings of the software. Software updates usually include feature enhancements and/or resolve problems discovered with the software subsequent to its release. We recommend you use the latest version of the LogTag Analyzer software available.

Finding your software version

Within the "***Help***" menu, is the "About LogTag Analyzer..." command, which will display a Window similar to the following picture.



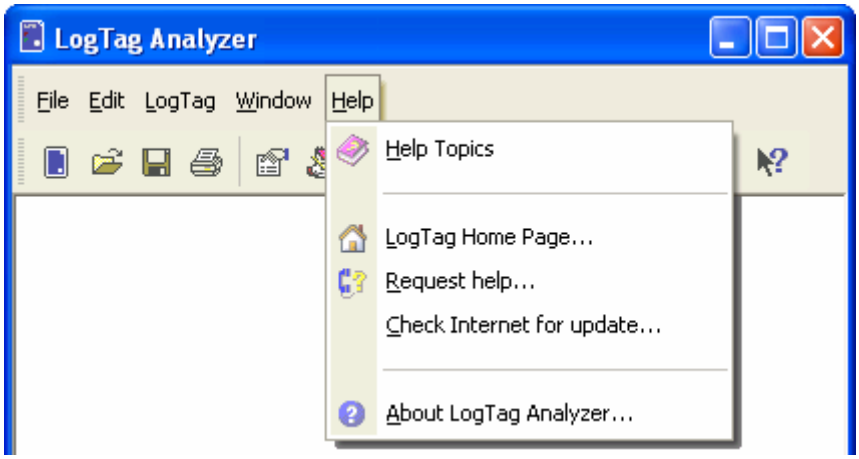
Within this window, amongst other information, the full version number of the software being used is displayed. This information is useful, for example, to determine if the same software version is installed on multiple computers and/or if the user guide being referenced refers to the version of software being used.

For example, if the window shows the software to be "LogTag Analyzer 1.2" and the version of this guide is 1.2, then the contents of this user guide refer to the version of software being used. If however, this window shows the software to be "LogTag Analyzer 1.0" and the version of this guide is 1.2, then this version of the user guide does not refer to the version of the software being used. The version of this guide is 1.2, which is also shown on the cover page of the guide.

Each time the software is updated one part of the version number of the software is always increased. The "Build" number portion is increased for a given version of the LogTag Analyzer software when the change included in the software will not affect the matching version of the user guide. For example, version 1.2 of the guide refers to both the "LogTag Analyzer, Version 1.2 Build 2" and the "LogTag Analyzer, Version 1.2 Build 5" of the software.

Getting more help

The time may arise when this guide is unable to provide you with the assistance you require. The LogTag Analyzer software includes a way to make the process of getting further assistance from LogTag Recorders as simple as possible, while providing the support team at LogTag Recorders with enough information about your system to be able to provide you with useful assistance. Within the "Help" menu of the software is a "Request help..." command.



This command will gather non personal information from your system to include in the email, which you can review if you want to, so that LogTag Recorders will be informed of the relevant information about your system in order to provide you with quality and useful assistance. Please include in the email as much information and detail about the problem that you are experiencing with the LogTag Analyzer software as possible, even if you may think it to be irrelevant, as the more information that is available the more likely LogTag Recorders will be able to provide you with an appropriate solution quickly.

If you have suggestions for software improvements, you may also use this method to send your ideas through as LogTag Recorders is always in the process of improving the software and adding additional features to it, so that the software becomes increasingly more efficient, effective and useful for users.

CHAPTER 10

Appendix

In This Chapter

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Troubleshooting

Problem	Solution
My LogTag appears to be “dead”. No lights are flashing.	This could represent either of two conditions: **1** The LogTag is ready to start, but has not been started yet. **2** The LogTag is simply in a state where the configuration has the LED flashing turned off. This is an option that may be selected when a LogTag has been shipped to the user for the first time (to preserve battery life) or it may be that the last configuration setting selected no LED display. **3** The battery is dead and the LogTag is expired. How to test: **1** Try pressing the START MARK button on the LogTag. **2** Start the LogTag Analyzer software and place the LogTag into the Interface Cradle. Download the LogTag. If the LogTag can be identified by the software, then the battery is good, and the LogTag is OK.
I am unable to get a serial port “free”. Every time I run the software, every port shows that is already in use	On rare occasions it may be difficult to configure some computers for releasing the assignment of a serial port from one application to another. Often, this will require the services of a computer technician or expert. One simple solution is to purchase a USB Interface Cradle. USB connections do not have a “free port” limitation.

What happens if there is an electrical current between the contacts...will that damage the LogTag?	The contacts are isolated from the critical internal component such that incidental static discharge will not harm the LogTag. Deliberate application of a full outlet voltage (100 – 240 volts AC or 12-24 volts DC) to the LogTag may cause permanent damage.
I cannot view the user guide that came with the software.	The User Guide is in a 'PDF' file format and as such a special software package called "Acrobat Reader" is required to view it. Acrobat Reader is available for free download from the Adobe web site and can typically be downloaded from ***http://www.adobe.com/products/acrobat/readermain.html*** http://www.adobe.com/products/acrobat/readermain.html.
I cannot see all the readings in the "data" screen, some appear to be missing.	The range of readings shown in the data screen represent the range of readings shown on the Chart screen. Whenever the Chart is zoomed in to show more detail the range of readings shown in the data screen is updated as well. If the chart is zoomed out ( ) to show all readings that were recorded, then the data screen will also show all the readings that were recorded.
Why are some of the readings shown "non validated".	The LogTag automatically inserts error detection codes every 127 recordings which checks for the detection of corrupted or manipulated data. If the LogTag has been configured to do ***continuous recording*** then as each block of 127 logs is started to be replaced with the latest readings the data integrity error check for the "oldest" block will fail, which will therefore technically putting the block of data into doubt. This is not a problem rather that the particular block of data now has the lost a degree of data integrity protection and hence is labelled 'non-validated'. Non-validated readings can also occur if there has been communications issues during data transfer from the LogTag or if the memory does actually have a fault, however these causes are very rare.

Resolving USB Driver Problems

Every USB device requires the appropriate driver files to be installed prior to them being successfully used on a computer. The installation process of the LogTag Analyzer software will attempt to ensure the appropriate driver files are installed on the computer. These driver files may fail to install correctly if the USB Interface Cradle is connected to the computer prior to and/or during to the installation of the software. Therefore, it is strongly recommended that the software is installed prior to any USB Interface Cradles being connected to the computer.

The following sections will guide you through the steps necessary to determine whether or not a problem exists with the installation of the USB drivers for the USB Interface Cradle are installed correctly on the computer and, if necessary, how you can resolve a problem with the installation of the USB drivers.

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Checking the installation of the USB driver

The following will guide you through the steps necessary to determine whether or not the drivers for the USB Interface Cradle are installed correctly on the computer.

1 Providing the LogTag Analyzer software has been already installed, connect the USB Interface Cradle to the computer by plugging the Interface into an available USB socket. USB sockets are typically located at the rear of the computer.

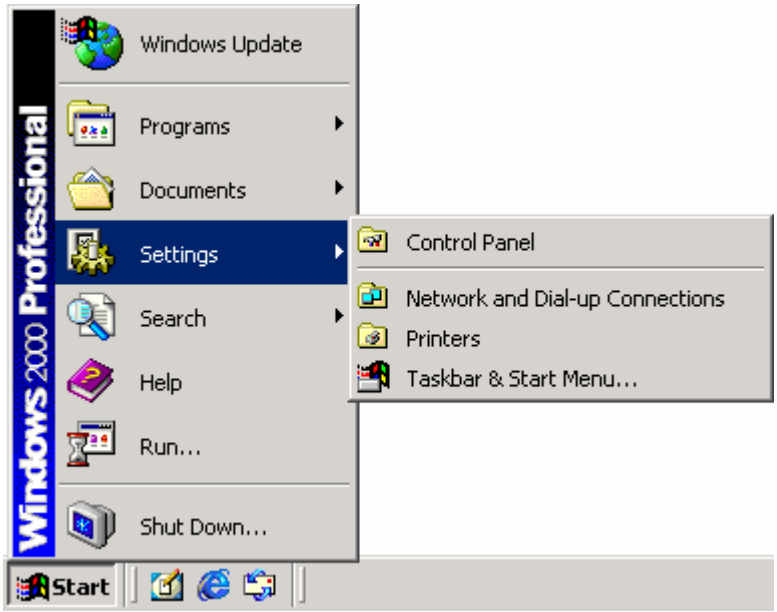
USB ports on the computer

USB Interface connector

2 Open the "Control Panel". This can be done by using the mouse to click on the Windows "Start" button, typically located in the bottom left of the screen, to open the Start menu. Once the "Start" button has been clicked, you will see a menu appear.

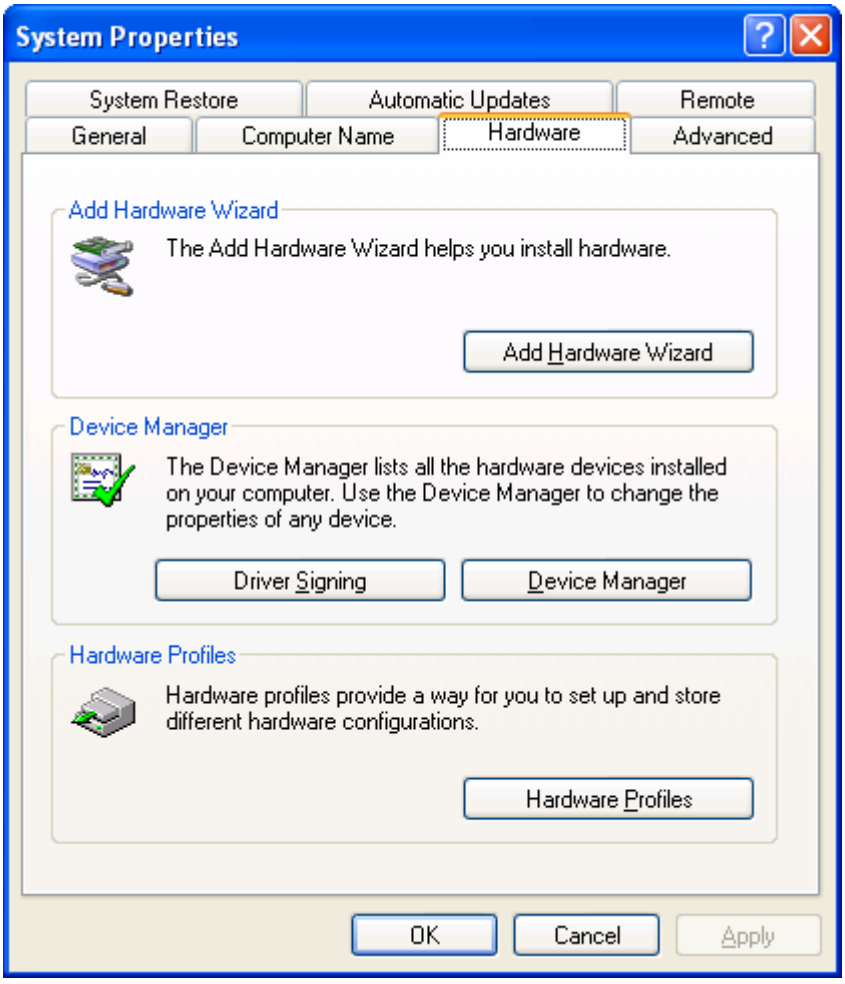
3 If your menu looks similar to the following picture, click on the visible "Control Panel" item.

4 If your menu looks similar to the following picture, the "Control Panel" item is located within the "Settings" menu item.

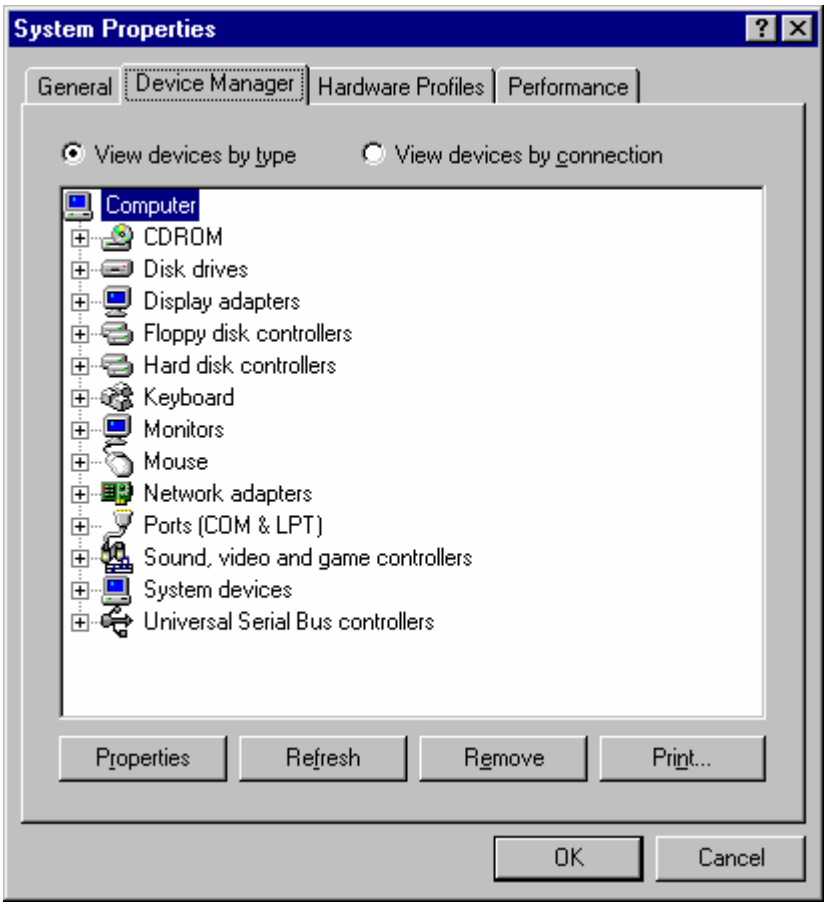


5 Within the "Control Panel" window there is a "System" icon. For Windows XP users, you may need to "Switch to Classic View" to locate the "System" icon quickly. Start (open) the "System" icon once you have located it.

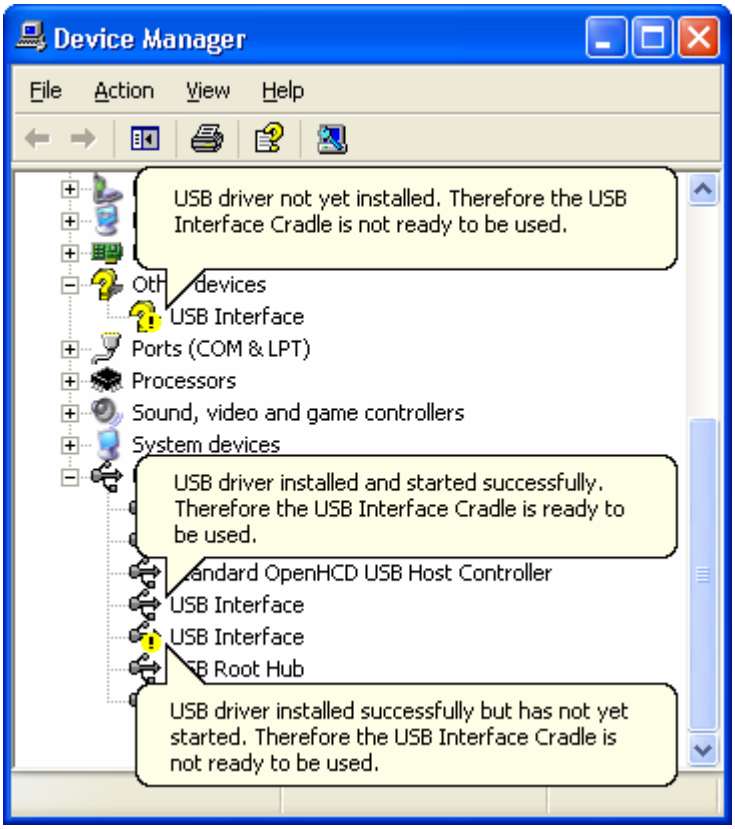
6 If your system properties looks similar to the following picture, click the "Hardware" tab followed by the "Device Manager" button to open a view of the devices that have and have not been successfully installed on the computer.



7 If you system properties looks similar to the following picture, click the "Device Manager" tab to view the devices that have and have not been successfully installed on the computer.



8 Once the device manager is open you should see one of the three following images in the list, as indicated in the following picture. You may need to click on the "+" beside the "Universal Serial Bus controllers" entry to view all the USB devices that have been installed on the computer.



If the USB device driver installed successfully but has not yet started, the following will guide you through steps necessary to start the USB drivers so that you can start using the USB Interface Cradle(s).

If the computer is using Windows XP or Windows 2000:

1 Open the "Device Manager" as described previously.

2 For each "USB Interface" entry displayed, using the mouse (pointing device), click the right button on the text of the "USB Interface" entry to display the popup context menu, which will be similar to the following picture. Once this pop context menu is visible, select the "Uninstall" option, using the left button on the mouse.

3 Unplug all USB Interface Cradles that are plugged into the computer and/or are plugged into any USB hub that may be connected to the computer.

4 Wait for at least 5 seconds.

5 Plug the USB Interface Cradle(s) into the appropriate USB socket on the computer and/or USB hub that is connected to the computer. This should install and start the USB driver for the USB Interface Cradle(s). If the drivers do not successfully start, indicated by the "USB Interface" entry appearing in the device manager with either the or the picture, you may need to reinstall the USB driver files, which is described subsequently.

If the computer is using Windows 98 or Windows Me:

1 Open the "Device Manager" as described previously.

2 Select each "USB Interface" entry displayed (one at a time) and then click the "Remove" button.

3 Unplug all USB Interface Cradles that are plugged into the computer and/or are plugged into any USB hub that may be connected to the computer.

4 Wait for at least 5 seconds.

5 Plug the USB Interface Cradle(s) into the appropriate USB socket on the computer and/or USB hub that is connected to the computer. This should install and start the USB driver for the USB Interface Cradle(s). If the drivers do not successfully start, indicated by the "USB Interface" entry appearing in the device manager with either the or the picture, you may need to reinstall the USB driver files, which is described subsequently.

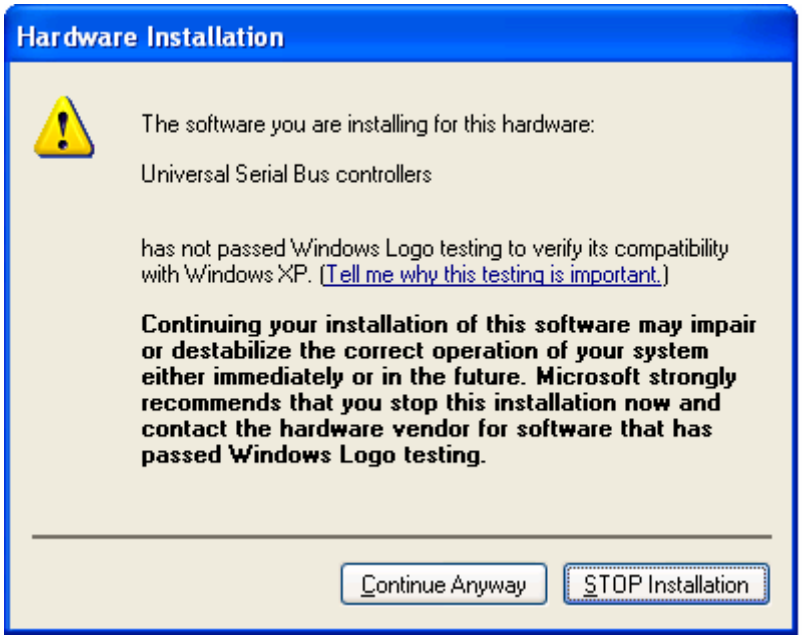
If the USB device driver files did not install correctly, you may either reinstall the software or manually install the USB driver files. The USB drivers where first released with the LogTag Analyzer software version 1.0 Release 74. If you have a version of the software prior to this, get a copy of the latest version of the LogTag Analyzer software and install the latest version of the software ensuring the all USB Interface Cradles are not connected to the computer during the installation process.

USB driver installation through software installation

To reinstall the software to install the USB drivers:

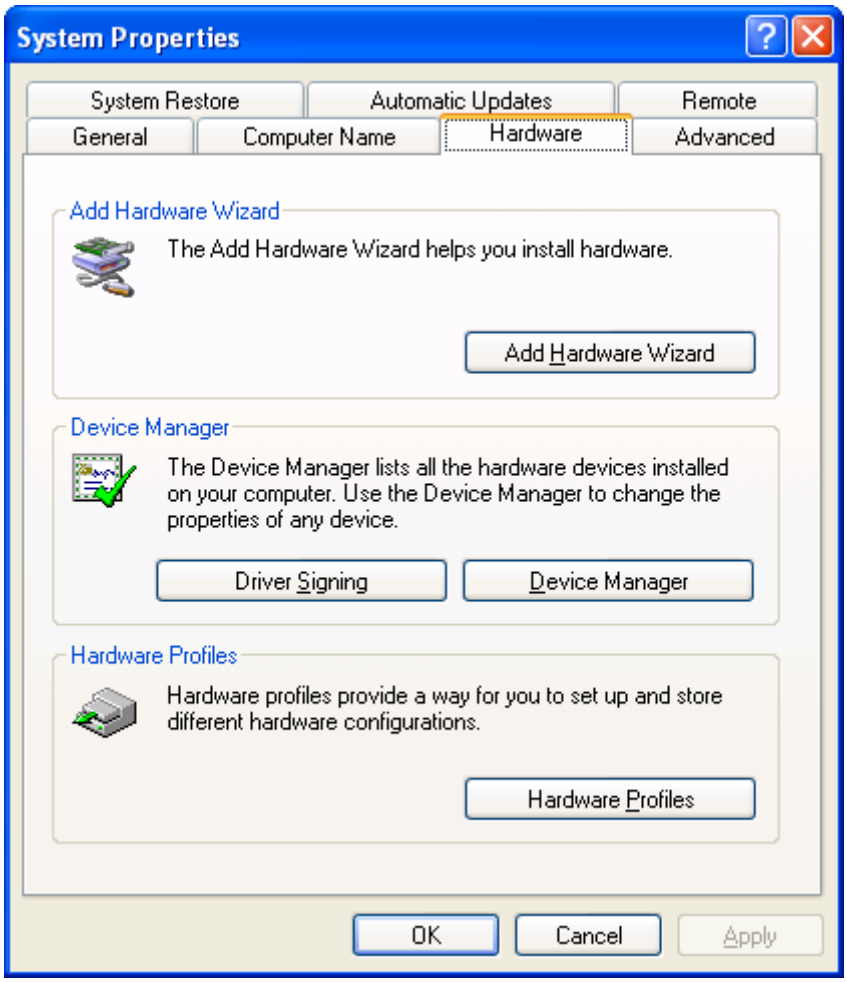
1. Unplug all USB Interface Cradle(s) that are connected to the computer and/or connected to a USB hub that is connected to the computer.
2. Start the Windows "Control Panel"
3. Within the "Control Panel" window there is a "Add/Remove Programs" or "Add or Remove Software" icon. For Windows XP users, you may need to "Switch to Classic View" to locate the "Add or Remove Software" icon quickly. Start (open) the "Add or Remove Software" icon once you have located it.
4. Locate the "LogTag Analyzer" entry and click the "Change/Remove" or "Add/Remove..." button.
5. Once the "LogTag Analyzer Setup Maintenance" window is open, select the "Repair" option and then click the "Next >" button.
6. Click the "Finish" button when it is displayed to complete the reinstallation of the software and USB driver files.

Note, if you see a window similar to the following picture appear during the installation of the USB driver files, you must click the "Continue Anyway" button for the USB driver files to successfully install.



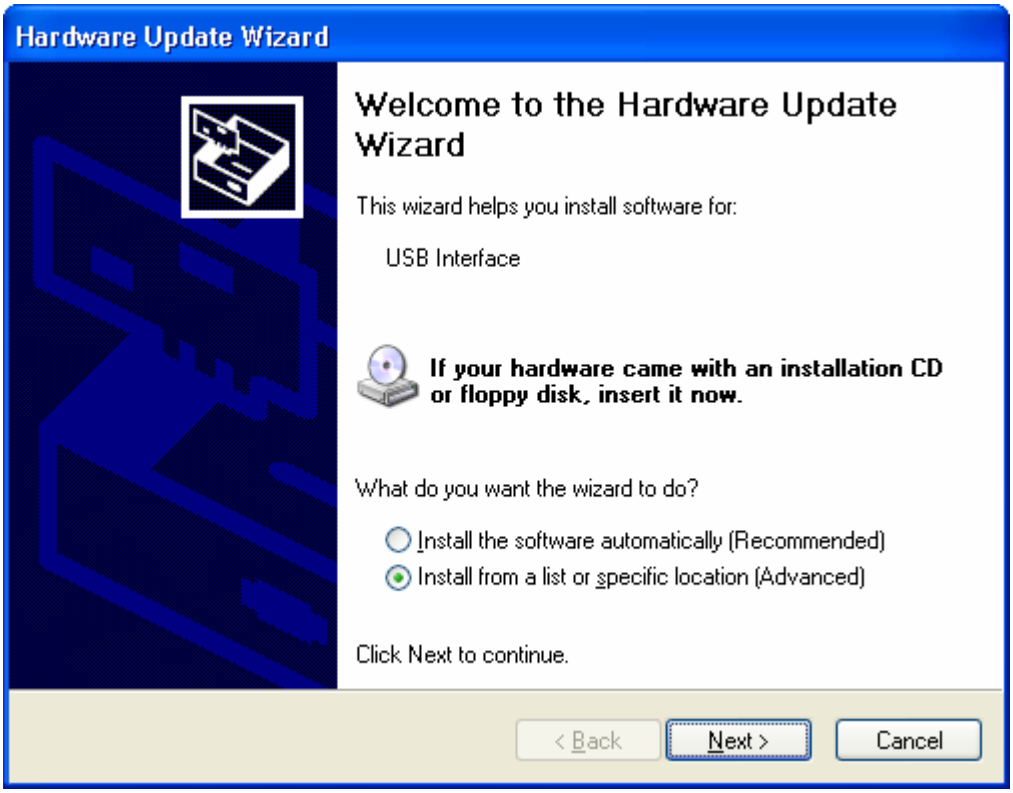
Manual USB driver installation on Windows XP

To manually reinstall the USB driver files, for Windows XP computers, open the "Device Manager". The "Device Manager" can be started by opening the "System" icon, located in the Windows "Control Panel", selecting the "Hardware" tab in the "System Properties" window and then click the "Device Manager" button.

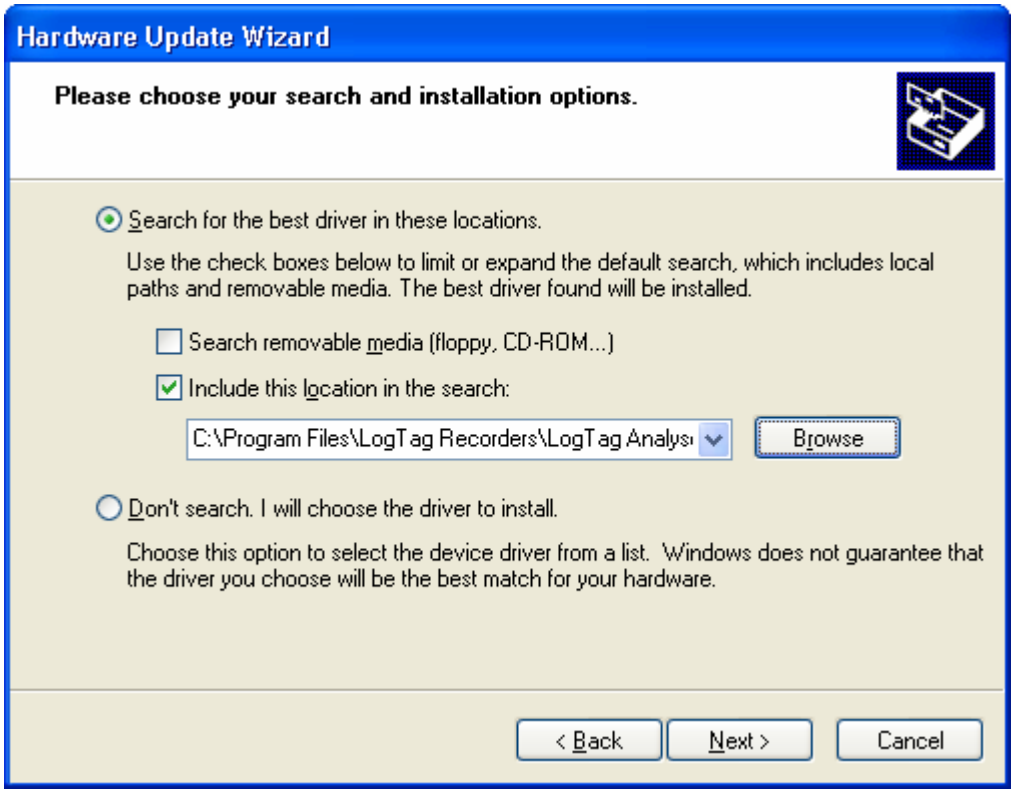


1 Using the mouse (pointing device), click the right button to display the popup context menu, which will be similar to the following picture.

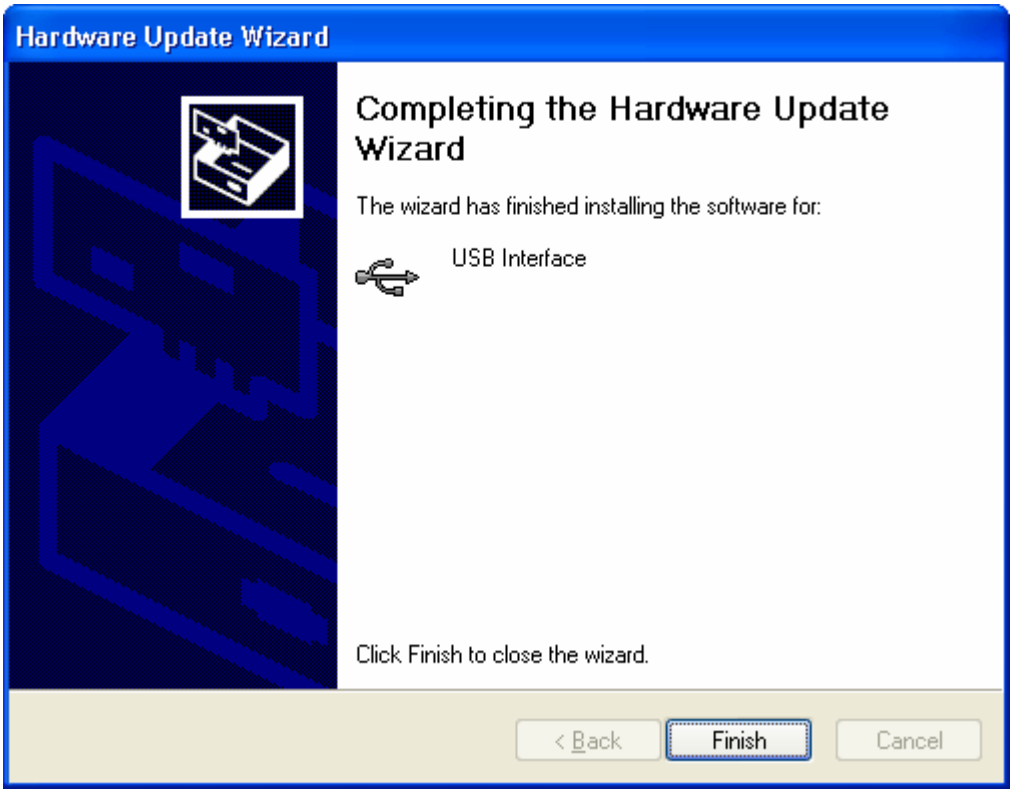
2 Select the "Update Driver..." option, using the left button on the mouse, which will cause the device driver wizard to start, similar to the following picture. Ensure the "Install from a list or specific location (Advanced)" option and then click the "Next >" button to continue.



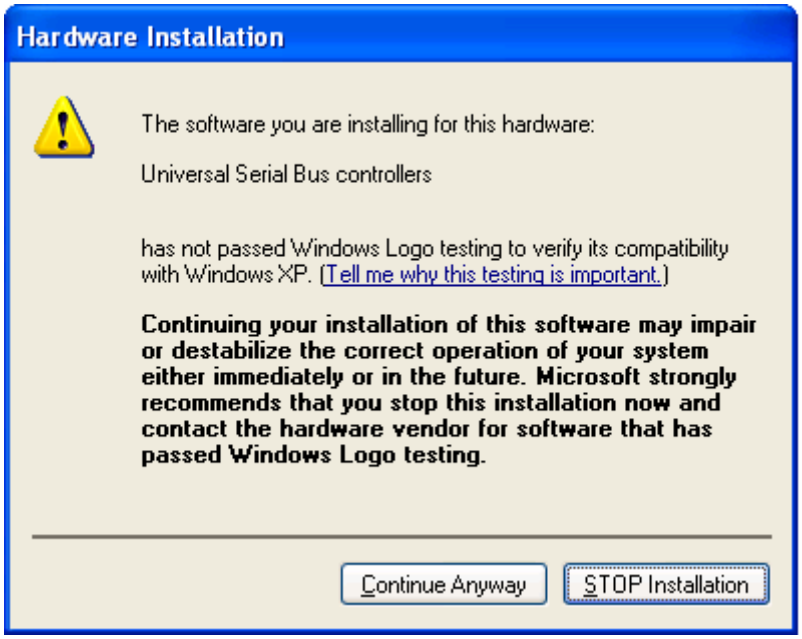
3 When prompted for the location of the driver files, enter the location of the installation of the software followed by the path to the USB driver files. The default location for these driver files is "C:\Program Files\LogTag Recorders\LogTag Analyzer\Drivers\USB Interface 2.0". You may use the "Browse..." button in the window that appears, similar to the following picture to help you locate the appropriate folder.



4 Once the driver files have been installed successfully you will see a window similar to the following picture. You may now connect and start using your USB Interface Cradle(s).

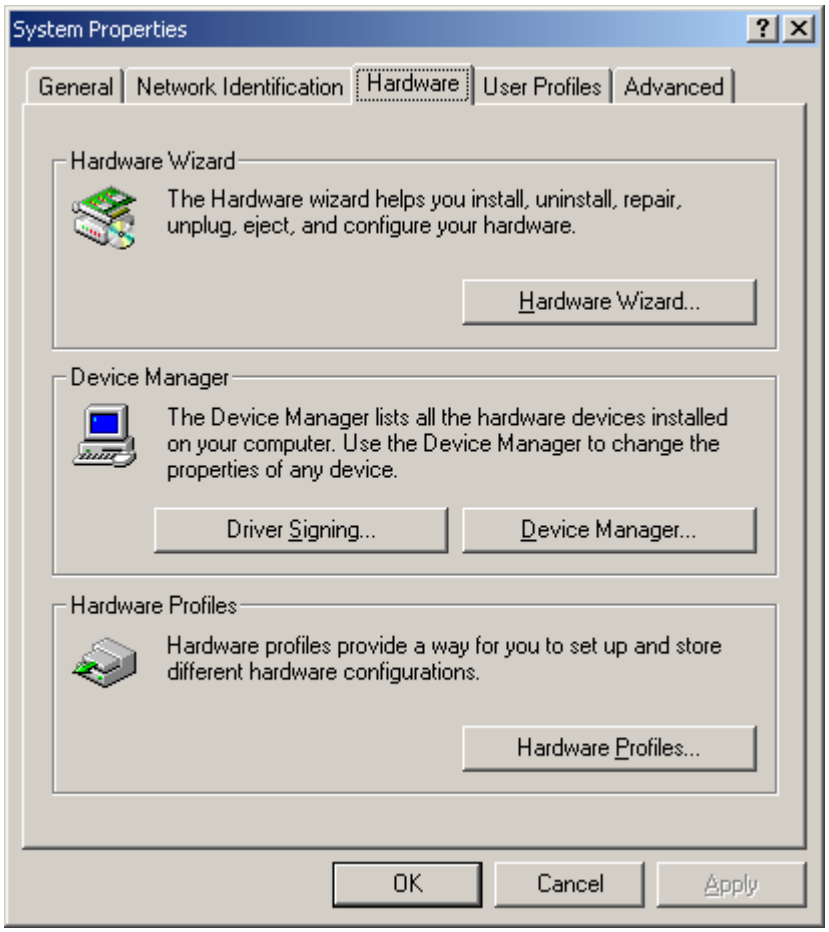


Note, if you see a window similar to the following picture appear during the installation of the USB driver files, you must click the "Continue Anyway" button for the USB driver files to successfully install.

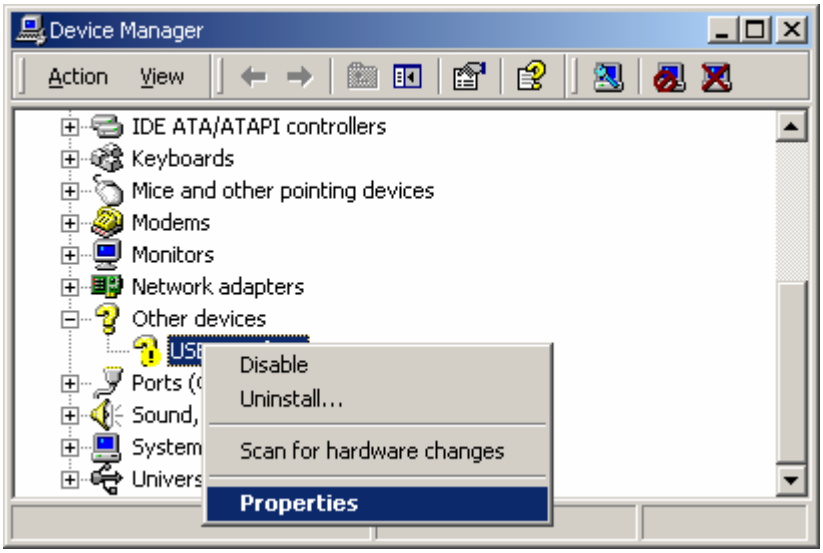


Manual USB driver installation on Windows 2000

To manually reinstall the USB driver files, for Windows 2000 computers, open the "Device Manager". The "Device Manager" can be started by opening the "System" icon, located in the Windows "Control Panel", selecting the "Hardware" tab in the "System Properties" window and then click the "Device Manager" button.

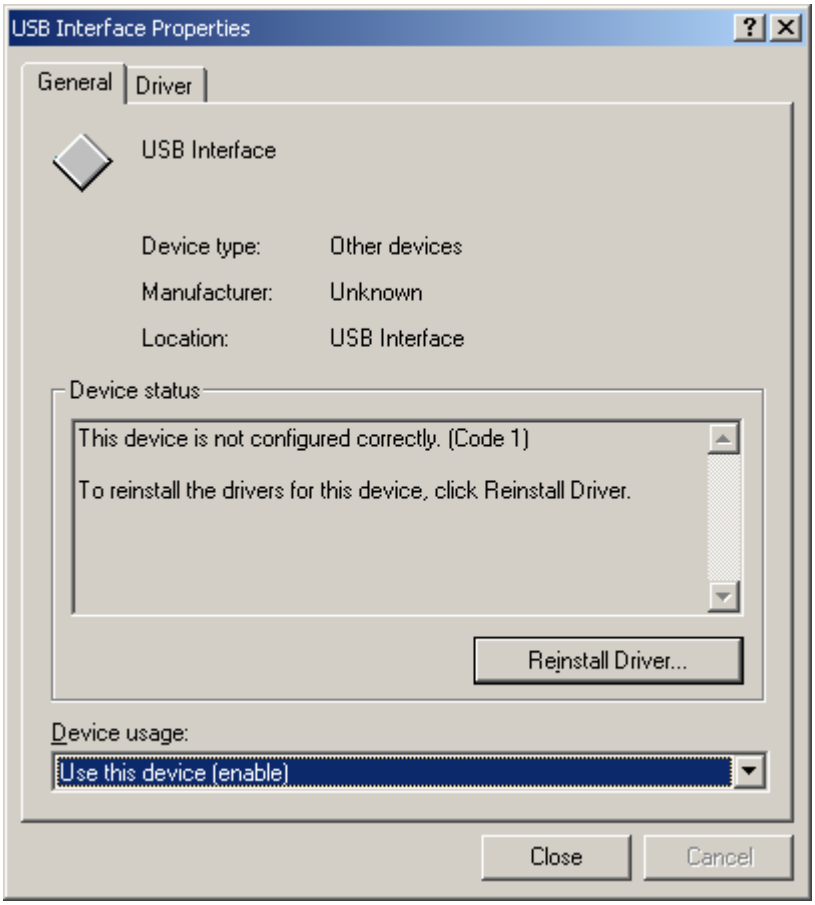


1 Using the mouse (pointing device), click the right button to display the popup context menu, which will be similar to the following picture.



2 Select the "Properties..." option, using the left button on the mouse.

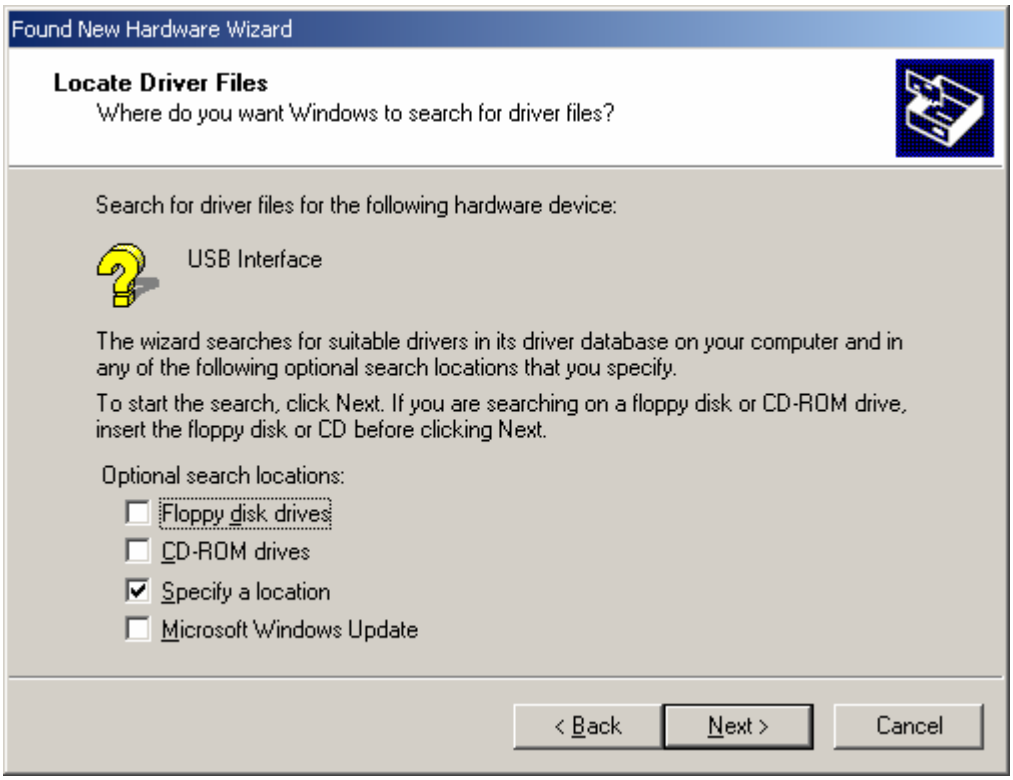
3 From the "USB Interface Properties" window that will appear, similar to the following picture, click the "Reinstall Driver..." button.



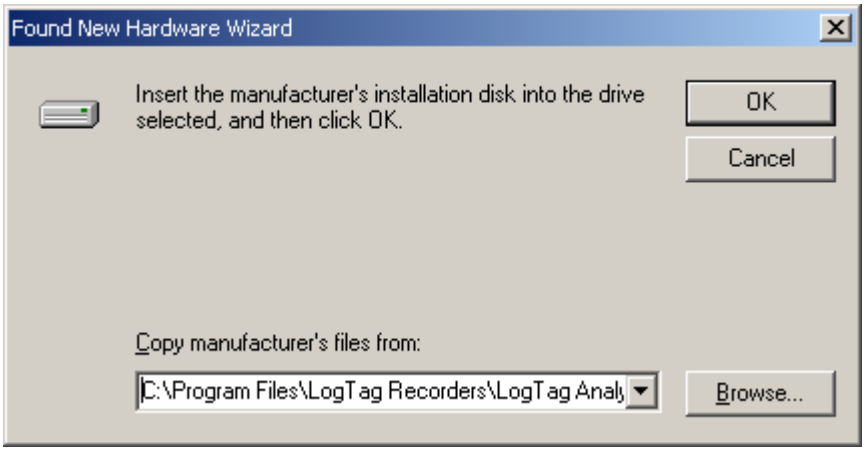
4 The will device driver wizard will appear similar to the following picture, click the "Next >" button to continue.

5 Ensure the "Search for a suitable driver for my device (recommended)" option is selected and click the "Next >" button to continue.

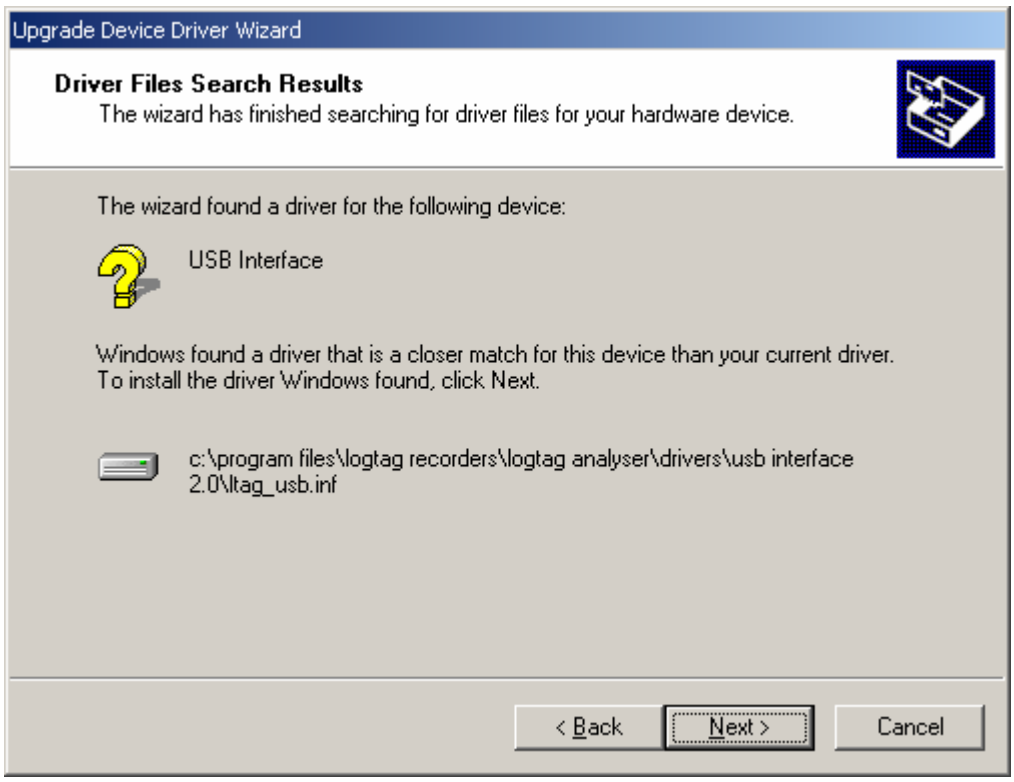
6 Ensure the "Specify a location" option is selected and click the "Next >" button to continue. It is best that the "Specify a location" option is the only one selected for the installation of the USB Interface Cradle driver files.



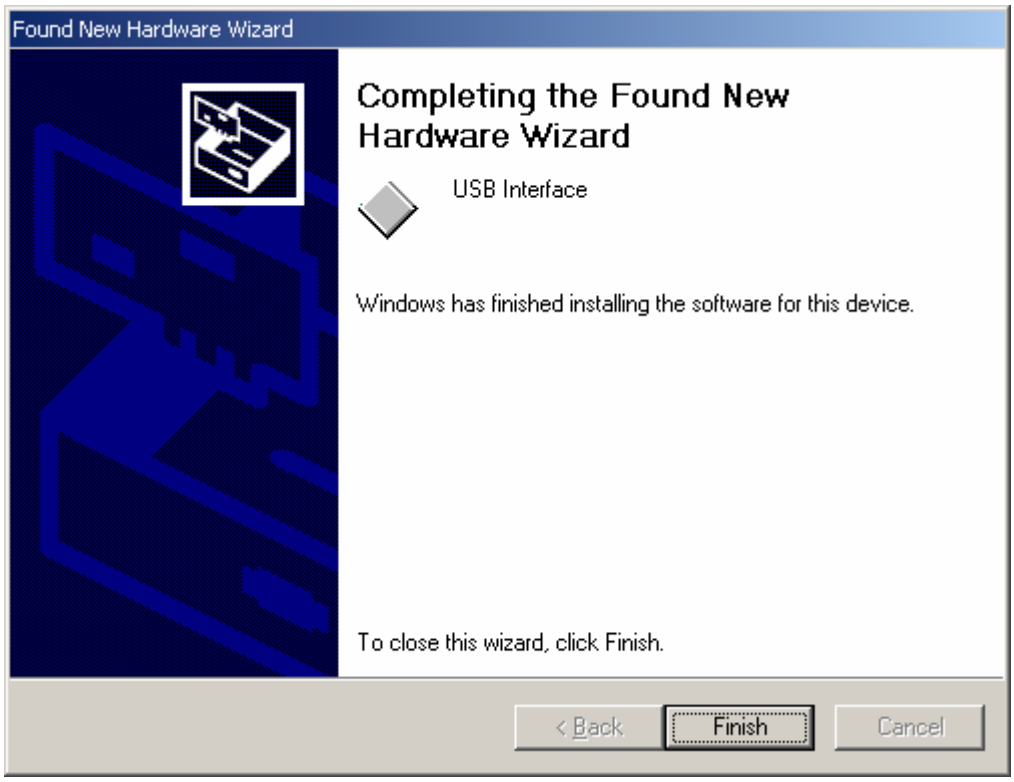
7 When prompted for the location of the driver files, enter the location of the installation of the software followed by the path to the USB driver files. The default location for these driver files is "C:\Program Files\LogTag Recorders\LogTag Analyzer\Drivers\USB Interface 2.0". You may use the "Browse..." button in the window that appears, similar to the following picture to help you locate the appropriate folder.



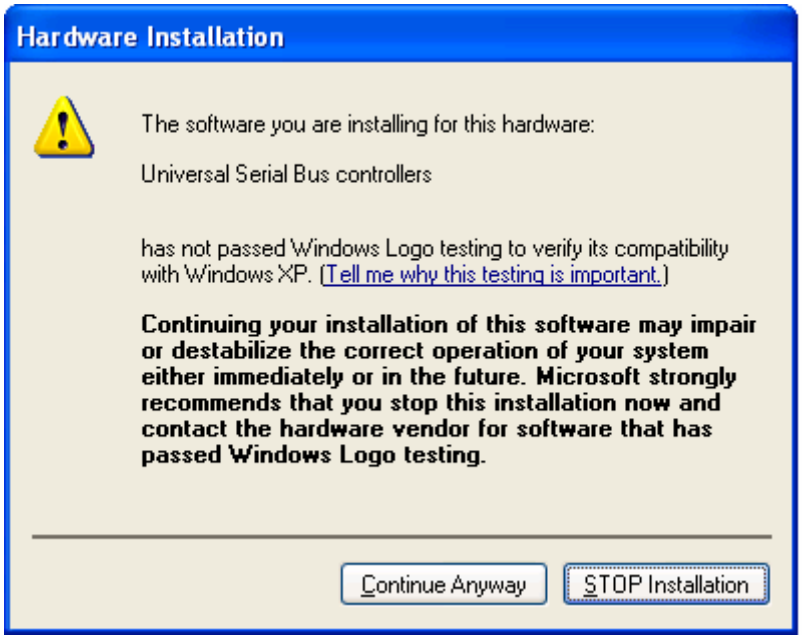
8 If you have chosen the correct folder that contains the driver files for the USB Interface Cradle, you will see a window similar to the following picture. Click the "Next >" button to install the driver files.



9 Once the driver files have been installed successfully you will see a window similar to the following picture. You may now connect and start using your USB Interface Cradle(s).



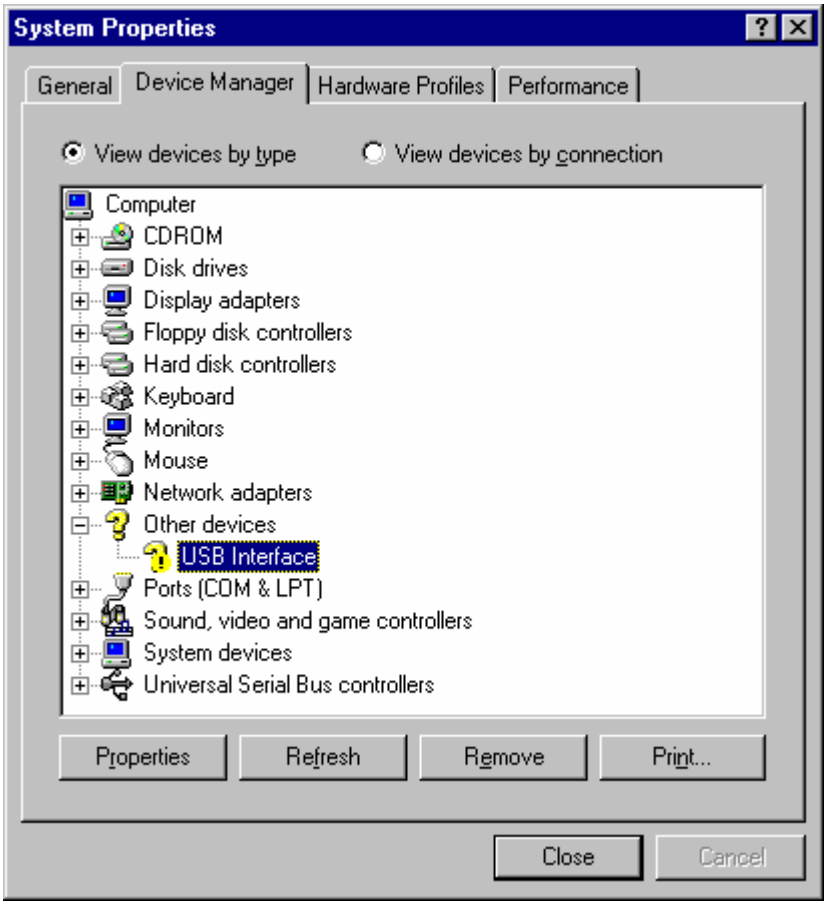
Note, if you see a window similar to the following picture appear during the installation of the USB driver files, you must click the "Continue Anyway" button for the USB driver files to successfully install.



Manual USB driver installation on Windows 98 or Me

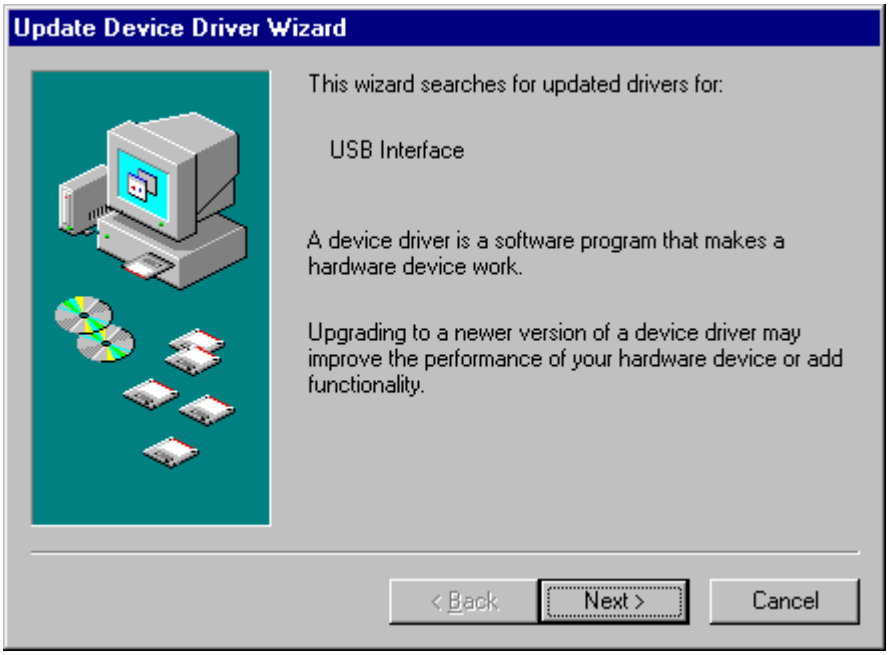
To manually reinstall the USB driver files, for Windows 98 and Me computers, open the "System" icon in the Windows "Control Panel" and select the "Device Manager" tab.

1 Select the "USB Interface" item that is listed in the "Other devices" group, similar to the following picture.

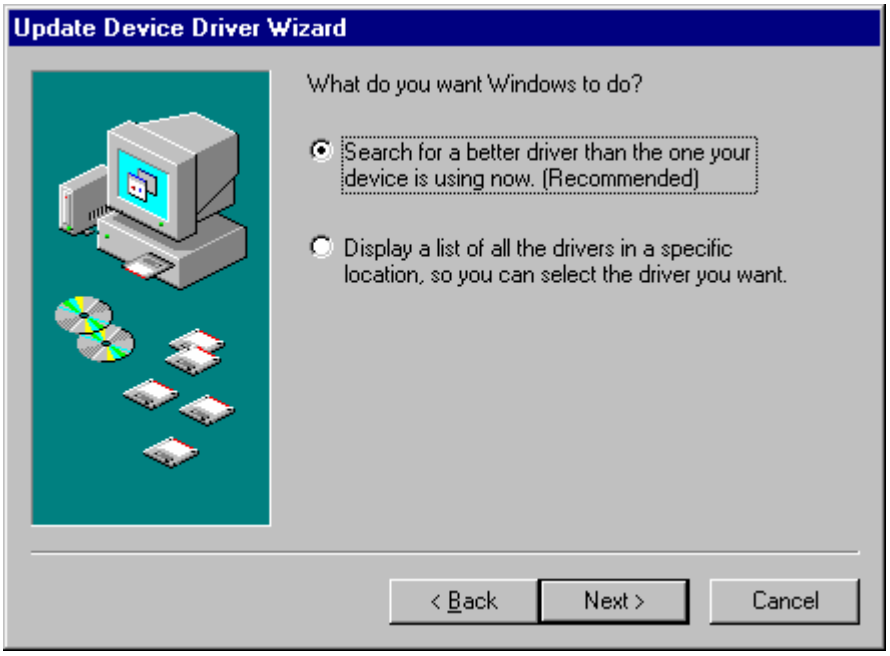


2 Click the "Properties" button to display the driver

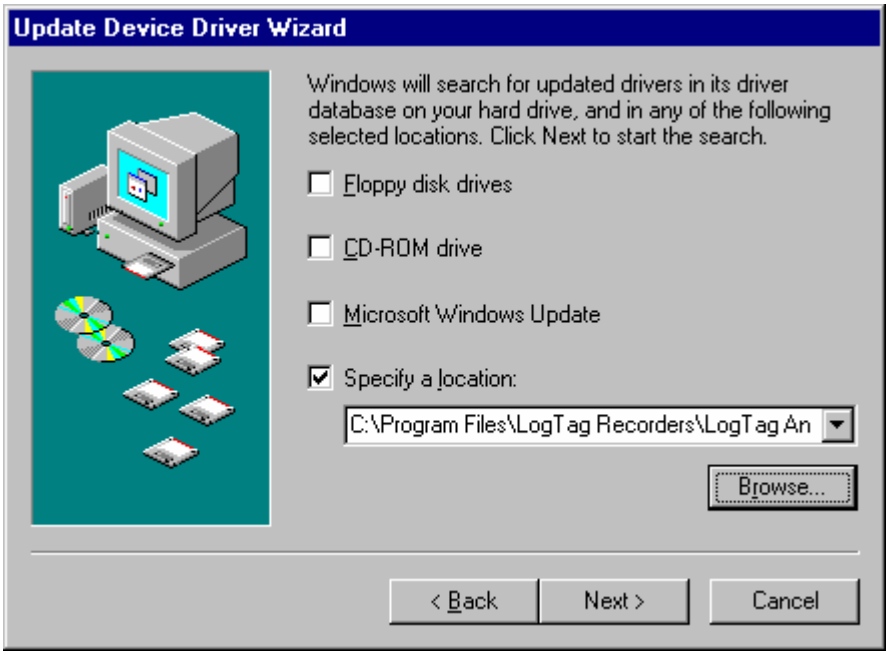
3 Click the "Reinstall Driver" button to begin the device driver wizard. Click the "Next >" button to continue.



4 Ensure the "Search for a better driver than the one your device is using now. (Recommended)" option is selected and click the "Next >" button to continue.

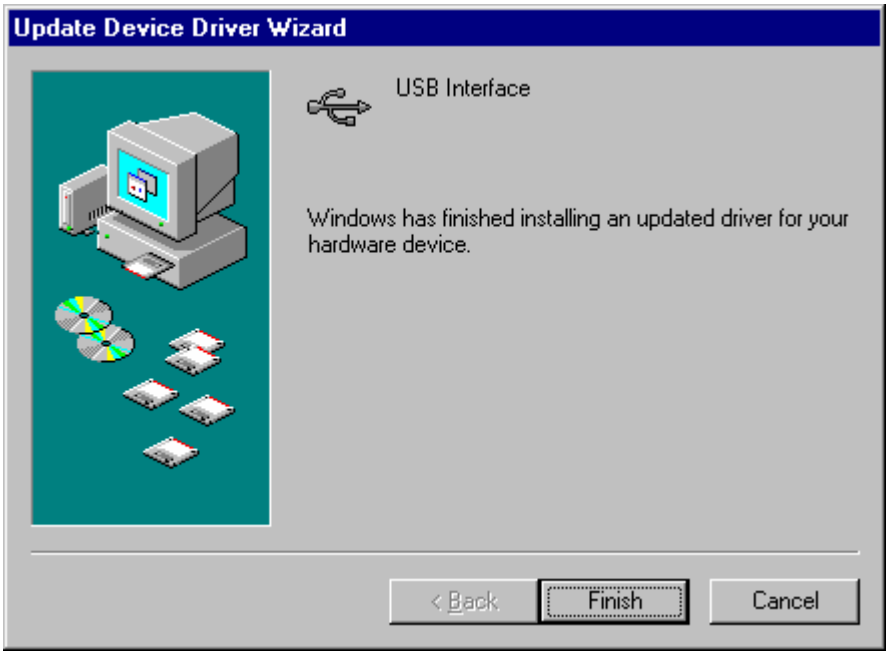


5 When prompted for the location of the driver files, enter the location of the installation of the software followed by the path to the USB driver files. The default location for these driver files is "C:\Program Files\LogTag Recorders\LogTag Analyzer\Drivers\USB Interface 2.0". You may use the "Browse..." button in the window that appears, similar to the following picture to help you locate the appropriate folder.

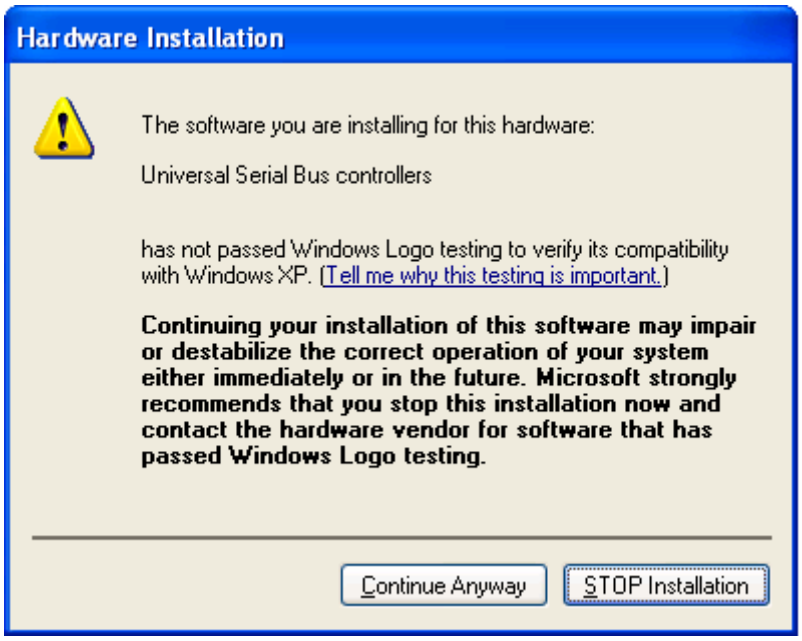


6 If you have chosen the correct folder that contains the driver files for the USB Interface Cradle, you will see a window similar to the following picture. Click the "Next >" button to install the driver files.

7 Once the driver files have been installed successfully you will see a window similar to the following picture. You may now connect and start using your USB Interface Cradle(s).



Note, if you see a window similar to the following picture appear during the installation of the USB driver files, you must click the "Continue Anyway" button for the USB driver files to successfully install.



Sensor Responsiveness

Temperature sensors typically respond to changes in the environment temperature in a logarithmic way and as such you will find that the responsiveness of temperature sensors (how quickly a sensor responds to an environmental temperature change) is expressed in terms of T90. T90 represents the time it takes for a logger to respond to 90% of the actual change of the environmental temperature.

For example, if the actual environment temperature suddenly changed from 15° to 45° and the T90 of the sensor was 30 minutes, then 30 minutes after this sudden change the sensor would be reading (15 + (45 - 15) * 0.90) 42°. In reality, it is rare for the temperature of an environment to suddenly change to a very different temperature and then suddenly change again, usually it is a gradual incremental process.

For example, if the actual environment temperature changed from 15° to 45° over a period of 5 hours in a linear fashion, that is after 2 hours the temperature was 27° and after 4 hours the temperature was 39°, and the T90 of the sensor was 30 minutes, then when after 5 hours of this temperature change, that is the actual environment temperature was 45°, the sensor would be reading 44.7°.

The LogTag is designed to produce a rapid response to temperature changes, which is possible because the actual sensor element of the logger system is external to the logger body itself. You can actually touch the tip of the bare thermistor element with your finger. The T90 of the LogTag is less than 5 minutes in moving air, which is very responsive as some temperature recorders can take up to an hour for the T90 of the temperature change to be recorded.

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